

EXPANSION PROJECT

ENSR CORP



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ENSR

Formerly ERT

December 22, 1989

Mr. Douglas E. Stewart
Brohm Mining Corporation
P.O. Box 485
Deadwood, SD 57732

Dear Doug:

Enclosed please find the final benthic macroinvertebrate report. We have incorporated BHNF review comments into this final report.

If you have questions or requests, please contact us.

Sincerely,

Phil Hockney

for Russell T. Moore
Project Manager

RTM/dv

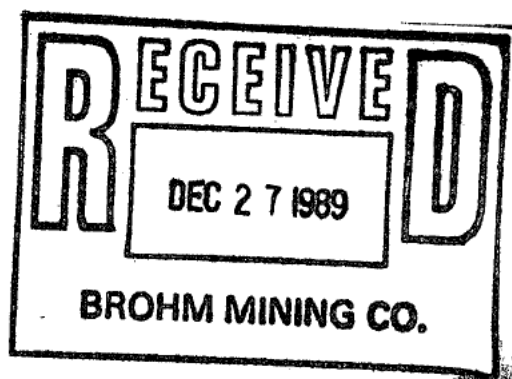
Ref: 1063-002.B06

Enc.

cc: D. Cornman, Bechtel



*Filed in Doug's file.
12/27/89*





United States
Department of
Agriculture

Forest
Service

Black Hills
National
Forest

Highway 385 North
RR 2, Box 200
Custer, SD 57730

Reply to: 2800

Date: September 20, 1989

Dear Concerned Citizen:

The accompanying newsletter provides information and the current status for the proposed Gilt Edge Expansion Project on the Black Hills National Forest. Included in the newsletter is information on Federal mining regulations, the Environmental Impact Statement (EIS) process and public involvement in this process, project issues, preliminary alternatives, and the public open house schedule for October 1989. As many of you know, I have appointed David Blackford, Nemo District Ranger, as my project leader for this proposal.

I will use the analysis in the EIS to develop a decision regarding the Plan of Operation that I have received from the proponent. Because the proposal includes expansion onto private and National Forest System lands in Lawrence County, a joint review committee has been established. The committee consists of the South Dakota Department of Water and Natural Resources, Lawrence County, South Dakota, and the Black Hills National Forest. I am the responsible official for the EIS. The joint process committee agencies will be making their decisions in a coordinated fashion.

I encourage all interested persons, organizations, and agencies to attend the open houses in Rapid City and Deadwood to obtain additional information regarding this proposal. I want to assure you that every reasonable effort will be made to keep you informed as we proceed through the EIS process.

Sincerely,

DARREL L. KENOPS
Forest Supervisor

Enclosures



NEWSLETTER
Gilt Edge Expansion Project
Environmental Impact Statement

INTRODUCTION

As most of you know, the Black Hills National Forest received a Plan of Operations from Brohm Mining Corporation on March 15, 1989 to expand their Gilt Edge Mine on to National Forest System lands. The submission of this plan triggered the preparation of an Environmental Impact Statement (EIS) which we are presently preparing.

Your next opportunity to learn more about our activities will be at two open houses in October. These will be held in Rapid City on October 10th and in Deadwood, South Dakota on October 11.

Due to the nature of the various regulatory agencies involved in reviewing mining development proposals, the Black Hills National Forest (BHNF) has entered into a joint review agreement with the South Dakota Department of Water and Natural Resources and Lawrence County. This agreement is to facilitate the flow of information and data requirements of the agencies and to address those needs in the EIS where it is appropriate. The agencies have formed a committee to oversee the preparation of the document and to ensure that the needs of the various agencies are represented in the analysis.

BASIC GROUND RULES

1) Mining Regulations

From the letters we have received it is clear many people do not realize most federal lands are open to mineral entry. Mineral entry means the lands are available to the general public for establishment of mining claims. These mining claims give the claim holder the possessory right to the mining claim for purposes of developing and extracting minerals. When purchasing land there are two types of property associated with each tract of land; the surface estate (above ground) and the mineral estate (below ground). When a private party holds a mining claim (mineral estate) on federal lands but does not hold the ownership to the surface, it is called an "unpatented mining claim". A claimant may use only as much of the surface and surface resources as are reasonably necessary to carry out mining operations. If there will be any type of disturbance to the surface resources, the claimant must get approval from the federal land manager.

Many people commented that we should "just say no" to Brohm's proposal. Under the regulations pertaining to locatable minerals on National Forest System Lands, we cannot arbitrarily deny a proposal; but we must evaluate the proposal for the effects it may have on the environment. When a claimant wishes to do surface disturbing work on their claim (within a National Forest), they must file a Plan of Operations with the local District Ranger. The Plan of Operations must explain when, where, how and what they intend to do on their mining claims. An analysis is then prepared to determine the environmental

effects of the proposed activities. This is where we are now with the Plan of Operations that Brohm Mining Corp. has submitted. These regulations are part of 36 CFR part 228 subpart A.

2) Environmental Impact Statement and Review Process

The purpose of an EIS is to assure that the National Environmental Policy Act of 1969 (NEPA) policies and goals are incorporated into federal actions. NEPA is the basic statutory charter governing federal actions and the environment. It establishes a means to "create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans".

An EIS is not a decision document. It is a document that discloses the environmental consequences of implementing the proposed action and alternatives to the proposed action. It is an important document that Federal, State and local governments use to arrive at decisions regarding the proposed action and alternatives. In this case, we will be analyzing the Plan of Operations submitted by Brohm, and all reasonable alternatives to their proposal.

The process of analyzing and disclosing environmental consequences and then making and implementing a decision is often called the "EIS process". It is a flexible but orderly process used to look at the environmental effects of a wide variety of federal actions.

One of the early steps in the EIS process is called scoping. Scoping considers the need, context, and issues related to a proposal (such as the Gilt Edge Expansion Project). The public notices in the media and the public meetings held in May, helped us provide information and gather public comments. The comments gathered from the public meetings and the letters, helped us to determine the public issues that need to be addressed in the EIS. We also used issues from other federal, state and local agencies to develop the "Issue Topics" to be addressed in the EIS.

The issue topics guide the development of alternatives to the proposed action and define what type of information needs to be gathered and analyzed to evaluate the environmental effects of the proposal and alternatives. After the effects have been determined, measures are developed to mitigate (to reduce or eliminate) the environmental effects of the alternatives and the proposed action. Not all effects can be completely mitigated. For example, ground disturbing activities will increase erosion and sedimentation. These effects cannot be eliminated, but can be reduced by not allowing sediment to enter stream channels and limiting soil erosion by using various methods to keep the soil material in place.

After completion of the various chapters (issues and concerns, alternatives to the proposed action, environmental effects and mitigating measures), a Draft Environmental Impact Statement will be prepared. This draft document will be made available to the public for a 90 day comment period. During this time, we will be asking the public to make formal comments and address issues where additional analysis or descriptions are needed before a final EIS is prepared. Other federal agencies will also be reviewing the draft document at this time. These agencies include the EPA, US Fish and Wildlife Service, Bureau of Land Management, Bureau of Mines, US Geological Survey, Bureau of Indian Affairs,

and National Park Service, as well as the South Dakota Congressional Delegation.

At the end of the public comment period, all of the comments received will be analyzed and addressed in the final EIS. The final EIS will then be published. The Forest Supervisor, Black Hills National Forest, will review the analysis in the EIS and make a decision concerning the Plan of Operations submitted by Brohm Mining Corp.

BROHM PUBLIC PARTICIPATION RESULTS TO DATE

A) SCOPING OF ISSUES

In order to gather public comments, news releases were sent out to a wide variety of newspapers and magazines concerning the proposed Gilt Edge Expansion Project EIS. Letters were also sent out to those people who expressed an interest or who may be impacted by the proposal. Two public meetings were held in May with over 500 people attending. From this effort, we have received over 200 letters and many verbal comments on the proposal.

From the written and verbal comments received, we developed a list of 78 comments that expressed the areas of public concern with the proposal. A few of these comments were not issues that could be addressed in the EIS. The majority of the comments were then combined with comments that various state, county and federal agencies had submitted. This list of public and agency issues were studied and grouped together under 16 broad headings called "issue topics".

Each issue topic contains a number of facets that are taken directly from the list of public and agency comments. Some issue topics have as many as 26 different facets that need to be addressed under that issue topic. As we stated above, the issue topics will be used to develop alternatives and determine what areas of concern need to be studied. As you can see, the public input that was provided during the spring will be a major contributor to the environmental analysis in this EIS.

The following are the issue topics developed for the Gilt Edge Expansion Project EIS:

1. What effects will the project have on surface water quality and quantity?
2. What effects will the project have on groundwater quality and quantity?
3. What threats does the project pose to human health, safety, and property?
4. What land uses will be temporarily or permanently precluded or adversely affected by the project?

5. Can soil productivity be maintained during and after the project, such that the site can be reclaimed to support productive vegetative communities?
6. What long and short-term effects will the project have on fish and wildlife habitat and populations?
7. What effects will the project have on cultural resources?
8. What effects will the project have on aesthetics (visual resources, visibility, noise)?
9. What effects will the project have on timber production and harvest?
10. Will the project affect any legally protected plant or animal species?
11. What will be the economic effects of this project?
12. What effects will the project cause on quality of life and community infrastructure?
13. What effects or demands on transportation and communications will the project generate?
14. Is the proposed project a legitimate use of public lands?
15. What effect does this project have on existing and potential projects in the area?
16. What are the environmental and liability implications of project abandonment or failure of reclamation?

B) PRELIMINARY ALTERNATIVES

As mentioned above, one EIS requirement is to develop a group of reasonable alternatives to the proposed action. The alternatives need to be developed from the issues raised during the scoping portion of the EIS process. At this time, we have developed a preliminary list of alternatives to the proposed action. There are still several that must be developed; but we are waiting for information from Brohm before we can fully develop these.

1. Siting Alternatives: These alternatives will deal with different locations for the tailings area as well as waste dumps. One of these alternatives will develop the scenario of slurrying the tailings to somewhere out of the Black Hills to the surrounding prairie. This alternative would require a long slurry pipeline, additional water, easements across private land, and/or purchase of private land.

2. Property Ownership: These alternatives will focus around the issue of long term liability and will address siting all the facilities on private land. Methods to analyze these alternatives will focusing on finding suitable private land for the waste dumps as well as the above slurry line and tailings area, using land exchange regulations to offset the use of National Forest Land for mining purposes, and using the laws and

regulations for patenting mining claims to add the affected lands to the private sector.

3. No Action Alternative: This alternative will be addressed in the EIS and used to compare the alternatives to what is happening now with the Oxide Project that is currently occupying the proposed pit area and a portion of Ruby Gulch.

4. Access Road Alternatives: These alternatives will address the issues of additional traffic, noise, dust, and safety of the existing road and any alternative that can be developed to offset these concerns that have been raised. Of course all other effects that a new access road could cause will also be analyzed.

5. Reclamation Alternatives: These alternatives will address the long term effects of different types of design of the tailings area and waste rock dumps (for an example, incorporating plastic liners as well as clay liners) as well as different types of neutralization of the tailings and how different reclamation practices will affect the designs. These alternatives will focus on the water quality, long term liability and human health and safety aspects of this project.

6. Mining and Milling Processes: These alternatives will discuss the different techniques that could be used to mine and process the ore from the Gilt Edge Mine.

7. Utility Corridor Alternatives: The proposal calls for upgraded electrical service as well as a natural gas pipeline to the mine site. These utilities will come out of the Deadwood area with several routes for both natural gas and electric service.

8. Water Supply Alternatives: The issue of where the water supply for the mine will be located and just how much water will be needed for the life of the project still has not been answered by Brohm. The development of this alternative is pending this information.

C) EIS STUDY PLAN

We have prepared a study plan to address the preparation of the EIS. Some of the key elements of the study plan involve: 1) review the existing data that Brohm Mining Corporation has provided; 2) determine if the information is satisfactory to address the issues and environmental consequences of the proposal and alternatives; 3) determine what information needs to be gathered; 4) describe how the analysis of the data will be performed; and 4) show how the consultant will assist the Black Hills National Forest in preparing the EIS. A tentative schedule for the EIS has also been prepared.

Additional data and surveys have been initiated to: 1) better define the visual effects of the project; 2) determine if there are any threatened or endangered species that may be affected by the project; 3) survey for sensitive plants and raptor nests in the area; 4) analyze the aquatic environment in Bear Butte Creek; 5) a soil inventory is being done to determine the amount of soil available for reclamation.

One of the more difficult studies of this project is predicting the water quality be of the proposed lake. There are several variables that make this prediction difficult: the size of the pit, the varying chemical nature of the geologic types and the quality of the inflowing water. This determination will require an indepth review of the drill hole data and developing a computer model to analyze the data and determine the likelihood for acidification of that lake.

D) PUBLIC INVOLVEMENT IN THE EIS PROCESS

The draft EIS is tentatively scheduled to be published for public review in April 1990. The public review time is generally 45 to 60 days. Due to the high degree of public interest in this project, we have extended the review time to 90 days. We plan to have the draft EIS in circulation for about 30 days and then hold an open house to answer questions about the document. You will then have approximately 60 days to provide written comment on the draft EIS.

As was mentioned above in the alternatives section, we have not received all the information that is needed to perform the analysis on the environmental effects. The publication of the draft will be delayed until all of the information is received and the appropriate analysis performed. We will be sending out newsletters similar to this one to keep you informed as the EIS process continues and alternatives become better defined. Of course, you are welcome to call or stop by the Nemo Ranger District office to discuss topics related to the EIS.

E) OTHER ASSOCIATED TOPICS OF INTEREST

1. During the public meetings in May, we stated that there was no National Forest System Lands involved within the 90 million ton pit boundary. Upon further investigation and better mapping techniques, we have ascertained that scattered over four different locations there are approximately 5 to 8 acres of National Forest System Lands within the pit boundary.

2. Brohm has changed their proposal by adding a constructed wetland in Lost Gulch below their proposed tailings area. The purpose of this constructed wetland is to collect any leakage or drainage from the tailings pond and force the liquid through an imitation wetland to filter out any impurities. This is fairly new technology for the western states but has been used in the eastern coal fields. This proposal has just been submitted to us and additional information will be needed before we can analyze it along with other alternatives in the area of reclamation.

3. Brohm has also changed their proposal by adding an alternative to fill their proposed pit with water from the Madison Formation. The purpose of this reclamation alternative is to reduce the potential for acidification in the proposed pit lake. The reasoning is that the less time the walls of the pit are exposed, the less oxidation of the sulfide material and the less chance of producing acid mine drainage problems. This would require pumping stations somewhere out on the edge of the Black Hills, a large pipeline to the mine area, and would require more than 100,000 acre feet of water to fill the pit. Again, this is a new proposal that has just been submitted to us and we need additional information before we can analyze this alternative.

4. The South Dakota Board of Minerals and Environment, as well as the Lawrence County Commissioners, have regulations that pertain to the qualifications of consultants that will prepare the social/economic reports for the state and county permits. These regulations require the consultants to appear before the boards and give a presentation on their qualifications and ability to prepare the report. ENSR, the consultant assisting the Black Hills National Forest in preparing the EIS, has been approved to prepare the social/economic reports for the state and county. Having one consultant prepare the social/economic report should provide for a uniform data base for all of the reviewing agencies.

OPEN HOUSE

We will hold two open houses to discuss the the EIS process with you. These open houses will be informal and allow you to come in and ask questions about how this project is developing. The following information will be available and we encourage you to become informed about mining regulations on Federal Lands, the National Environmental Policy Act, and the process followed in preparing an EIS. We will have copies of the issue topics we have prepared, the study plan, and the schedule for the completion of the EIS.

An Open House will be held in Rapid City on October 10th in the Alpine room at the Rushmore Civic Center between 3pm and 7:30pm.

A second Open House will be held in Deadwood on October 11th at the Masonic Lodge from 3pm to 7:30pm.

Black Hills National Forest

Deadwood, South Dakota



Draft Study Plan for an Environmental Impact Statement for the Proposed Gilt Edge Expansion Project

**ENSR Consulting and Engineering
(Formerly ERT)**

June 1989

Document Number 1063-001

1063-001

DRAFT STUDY PLAN FOR AN
ENVIRONMENTAL IMPACT STATEMENT
FOR THE PROPOSED GILT EDGE EXPANSION PROJECT

Prepared for

BLACK HILLS NATIONAL FOREST
Deadwood, South Dakota

Prepared by

ENSR Consulting and Engineering
Fort Collins, Colorado

June 1989

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1-1
2.0 TECHNICAL APPROACH	2-1
2.1 Scoping	2-1
2.2 Collect Existing Baseline Data/Site Visit	2-1
2.2.1 Collect Existing Data	2-1
2.2.2 Site Visit	2-1
2.3 Review Engineering Design	2-1
2.4 Review Existing Data/Address Data Deficiencies	2-2
2.4.1 Review Existing Data	2-2
2.4.2 Address Data Deficiencies	2-2
2.5 Evaluate Alternatives to the Proposed Action	2-3
2.6 Determination of Environmental Impacts	2-3
2.6.1 Air Resources	2-5
2.6.2 Water Resources	2-6
2.6.3 Geology and Soils	2-9
2.6.4 Wildlife and Fisheries	2-11
2.6.5 Vegetation	2-13
2.6.6 Cultural Resources	2-14
2.6.7 Socioeconomics	2-16
2.6.8 Noise	2-19
2.6.9 Visual Resources	2-20
2.6.10 Land Use	2-22
2.6.11 Recreation	2-23
2.7 Prepare Major EIS Sections	2-24
2.8 Prepare Additional EIS Sections	2-24
2.9 Publish Draft and Final EIS	2-28
2.10 Public Hearings and Meetings	2-28
2.11 Prepare Responses to Comments of Draft & Final EIS	2-28
2.12 Monthly Meetings	2-28
3.0 WORK SCHEDULE	3-1
4.0 KEY PERSONNEL	4-1
APPENDIX A - DRAFT SIGNIFICANCE CRITERIA	A-1
APPENDIX B - SUMMARY OF PUBLIC SCOPING MEETINGS AND WRITTEN COMMENTS	B-1

1.0 INTRODUCTION

ENSR Consulting and Engineering is pleased to submit this Draft Study Plan for a third-party environmental impact statement (EIS) for the Black Hills National Forest (BHNF) for Brohm Mining Corporation's proposed Gilt Edge Expansion Project. ENSR has based this study approach on 1) the requirements of the National Environmental Policy Act (NEPA) of 1969 and Council of Environmental Quality implementing regulations; 2) regulations issued by the State of South Dakota regarding various permits required for this type of operation; 3) major issues, concerns, and opportunity addressed to date by agencies and public (public scoping meetings and written comments); and 4) ENSR's previous experience working on similar projects.

At the present time, six general types of alternatives have tentatively been identified including 1) Proposed Action, 2) Property Ownership Alternatives, 3) Siting Alternatives, 4) Process Alternatives, 5) Reclamation Alternatives, and 6) No Action. All alternatives to be studied in the EIS will be identified at the Interdisciplinary (ID) team meeting scheduled for June 12, 1989. Construction and operation impacts will be evaluated for all environmental resources for the alternatives developed by the ID team.

2.0 TECHNICAL APPROACH

2.1 Scoping

An important objective of the scoping process will be to focus the environmental analyses to specifically identify and thoroughly analyze significant issues and concerns. ENSR will assist the BBNF by initially preparing a public information document designed to inform interested agencies, organizations, and the general public about the EIS process and the proposed project. ENSR will assist the BBNF by attending all scoping meetings and preparing summaries of the issues raised. ENSR will review the concerns identified and assist the BBNF in determining the issues to be addressed in the EIS.

2.2 Collect Existing Baseline Data/Site Visit

2.2.1 Collect Existing Data

ENSR will visit Brohm's office in Deadwood to collect all reports and other information pertinent to preparing the EIS and subsequent permits. ENSR will also work with Brohm's existing contractors to the extent necessary to collect any data that have not yet been sent to Brohm. ENSR will monitor progress on any on-going studies by such contractors and will work with them for timely receipt of the data when it is completed.

2.2.2 Site Visit

The site visit will occur concurrently with the data collection visit. ENSR will send key technical personnel to the site in order to get a better understanding of the project location and layout of facilities relative to wildlife habitat, vegetation resources, and other important resources. The site visit will also provide an opportunity for ENSR's key staff to meet both key staff from Brohm Mining Corporation and their respective counterparts in the BBNF and various state agencies.

2.3 Review Engineering Design

ENSR's mining engineer will provide the required interface between Brohm, its contractors and the BBNF to review, from a technical perspective, aspects of the mining plan, proposed construction, and

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reclamation activities. Inherent in this review will be items such as pit development and slope stability, processing concerns related to tailings disposal, surface disturbance and impacts related to facility infrastructure construction, and alternative techniques proposed or considered for site closure and reclamation. These examples are intended to be indicative of the types of items considered in the review and should not be considered inclusive.

The objectives of the engineering interface and review conducted by ENSR shall be to determine the technical adequacy of the proposed plan of operations and its various components; and to identify additional data or information required to assure timely and accurate completion of the document.

2.4 Review Existing Data/Address Data Deficiencies

2.4.1 Review Existing Data

Based upon the review of existing data, it appears that sufficient baseline data have been collected for the majority of the affected resources. In those areas where data deficiencies are identified, ENSR will design a data collection program for approval by the BBNF. Only data deficiencies affecting ENSR's ability to conduct impact analyses will be considered cause for additional data collection. ENSR will work with Brohm's existing contractors or will collect the data itself. BBNF will make the final determinations regarding additional data collection.

2.4.2 Address Data Deficiencies

At this point in time, the existing database appears to be sufficient to complete the EIS with the exception of the soils and vegetation disciplines. ENSR recommends additional soils field sampling to 1) obtain analytical soil data (lab analyses of samples) for soil salvage/reapplication depth recommendations and erosion hazard estimates, and 2) refine the mapping of suitable soils within the existing complex level mapping (i.e., map out lower slopes and drainages).

ENSR suggests that a more detailed, sensitive plant and animal surveys be conducted unless additional, more site-specific data are presently available.

These and possibly other deficiencies will be addressed at the planned ID team meeting in Deadwood on June 12, 1989.

In addition to utilizing the baseline reports prepared specifically for Brohm's Gilt Edge Expansion Project, ENSR will contact appropriate agencies such as BHNF; U.S. Geological Survey (USGS); Soil Conservation Service (SCS); South Dakota Department of Water and Natural Resources (DWR); South Dakota Historic Preservation Officer; South Dakota Game, Fish and Parks Department; and the Lawrence County Planning Department to obtain relevant data within their files. The steering committee that is currently studying the population dynamics of the white-tailed deer also will be contacted for information on this important game resource. Other groups will be contacted as ENSR becomes aware of the need.

All contacts will be documented on telephone or visit summary sheets for incorporation into project files. All documents compiled for review and used in preparing the EIS will be logged and filed in a literature library for the project. A listing of the reports reviewed will eventually be turned over to the BHNF for public inspection during the draft EIS review period.

2.5 Evaluate Alternatives of the Proposed Action

ENSR will evaluate potential impacts associated with each of the proposed alternatives. Where appropriate, separate mitigation measures will be identified for consideration in relation to the various alternatives. ENSR will work with BHNF, state and local agencies, and Brohm to identify all reasonable alternatives or combinations of alternative components which should be addressed in the EIS. Decisions regarding identification of alternatives to be addressed in the EIS will be carefully documented.

2.6 Determination of Environmental Impacts

Impact analyses will emphasize important physical, biological, and human resource issues which are identified in the proposal, in the public scoping process, and in applicable state or federal regulations.

The specific approaches for impact analysis for each resource are described later in this chapter; however, it is important to address the overall approach. Impact analyses will be conducted to define direct,

indirect, and cumulative impacts, and analysis will depend on explicit cause-and-effect relationships associated with the proposed project. There are seven major questions that have to be answered by resource specialists when they conduct impact analyses. These are as follows:

1. How and what? Components or activities of the proposed project or alternatives that would cause effects or impacts will be identified.
2. How much? To determine their significance, impacts will be quantified, if possible. If quantification is not possible, impacts will be described in qualitative terms.
3. When and for how long? Impacts will be analyzed during different seasonal conditions as appropriate. Seasonal variations may influence impacts and could determine whether an impact is significant or insignificant. Duration of impacts would also influence significance.
4. Where? Location of impacts will be determined and documented. There may be significant indirect impacts that occur a substantial distance from the project.
5. How likely? The probability of impacts will be identified, where possible.
6. Significance? Determining significance is probably the most important part of impact analysis. ENSR will use a systematic approach to quantitatively establish "thresholds" or "criteria" for significance. If a final impact is projected to exceed the significance criteria, then it will be considered significant. ENSR's project team will coordinate with BBNF and state and local agency personnel to identify thresholds or other evaluation criteria.
7. How do you know? Conclusions reached in impact analysis will be documented by references identified in the literature, by discussion of rationale and methodologies used, or by other supportable means. Emphasis in the EIS will be placed on summarizing the analyses for the non-technical reader and technical details will be documented in appendices, as required.

The approaches to determining individual resource impacts due to the proposed project and the alternatives, as well as means to mitigate adverse environmental impacts, are discussed below.

2.6.1 Air Resources

Overview. The major issue for the air resources discipline on the Gilt Edge Expansion Project EIS is expected to be particulate emissions generated by mining and ore handling and processing operations. The principal fugitive dust emission sources for a typical mining operation are excavation of ore and waste rock (blasting), material transport and hauling, ore crushing, and wind-blown dust from disturbed areas. The major air resources effort in the EIS will be devoted to the particulate impacts issue.

Other air quality issues to be addressed in the EIS include vehicular emissions from employee traffic and mining equipment, dust generated by site preparation and construction activities, and the release of minor quantities of toxic gasses (e.g., hydrogen cyanide) from the tailings impoundment. Air quality and visibility impacts at potentially affected Class I air quality areas will also be analyzed.

Many of the important technical requirements for the air resources section of the EIS match requirements for a State of South Dakota Air Quality Permit Application. The air quality permitting requirements of the Gilt Edge Expansion Project are fairly simple and straightforward. The South Dakota air quality regulations cover only ore handling and processing sources such as crushers, conveyers, and transfer points. Fugitive dust from mining operations and haul roads are not covered by state regulations. Information generated from dispersion modeling and baseline analysis for the EIS will be utilized in the preparation of the air quality permit application.

Objectives. The objectives of the air resources component of the Gilt Edge Expansion Project EIS are as follows:

- Identify and characterize significant elements of the existing site-specific and regional air quality, climatology, and meteorology utilizing existing literature and field data collected by Brohm Mining Corporation's existing contractor.
- Calculate expected emission levels of particulate matter and other pollutants that would be generated by the proposed mining, milling, and tailings disposal operations and calculate the impacts of these emissions by using appropriate EPA approved atmospheric dispersion models.

- Analyze air quality impacts by comparison with applicable federal and state air quality limits.
- Assess the effectiveness of potential impact mitigation strategies that could be implemented.
- Assist in preparing application forms and supporting documentation for air quality permit.

Approach. These objectives will be accomplished as discussed below.

- Significant Impact Thresholds: ENSR will define thresholds for significant air quality impacts. For the most part, these will be applicable state and federal ambient air quality standards and Threshold Limit Values (TLV) for toxic substances. ENSR will consult with the South Dakota DWR and the Forest Service during development of the impact thresholds.
- Emissions Inventory: ENSR will calculate an emissions inventory for the proposed mining project and its alternatives. Expected major air emissions sources include the ore and waste removal, ore and waste handling and transport, ore crushing, wind erosion from disturbed areas, vehicular emissions from employee traffic and mining equipment, and potentially toxic fumes (i.e., hydrogen cyanide) from the tailings impoundment. The emissions calculations will generally be derived from EPA-accepted emission factors which account for variations in local characteristics. In the absence of specific on-site data, reasonable worst-case assumptions generated from similar mining operations will be utilized.
- Impact Assessments: The potential air quality impacts of the Gilt Edge Expansion Project will be quantified using an EPA-approved air quality dispersion model. Final selection of which dispersion model(s) to use will be made by a qualified ENSR air quality scientist after careful review of the site-specific characteristics and available input data. ENSR will consult with South Dakota DWR staff regarding model selection to ensure compatibility with regulatory requirements.
- Mitigation Measures: ENSR will identify potential mitigation measures which could be used by the applicant to reduce air quality impacts. The effectiveness and costs of such measures will be quantified where possible.

2.6.2 Water Resources

The project area lies within the Bear Butte Creek drainage basin which encompasses a total area of approximately 34.6 square miles. Lost Gulch, a tributary of Bear Butte Creek, is the proposed site for the tailings disposal area. Several other perennial, ephemeral, and intermittent streams in the area, including Strawberry Creek, Ruby Gulch, and Butcher Gulch will be impacted by the mining activities. Two Bit

Creek west of the site may be minimally impacted depending on location of discharge points for the operation. Thirty-four surface water monitoring sites have been installed in the vicinity of the Gilt Edge Project. Several springs, seeps, and ponds have been identified in the area, the majority of which are associated with old mine workings. Surface water is predominantly a calcium-magnesium carbonate water with high secondary carbonate alkalinity. Detectable levels of iron and arsenic have been found in localized stretches of the streams which is common in areas of sulfide mineralization.

Three groundwater aquifer zones have been identified in the area; the alluvial/colluvial near-surface material; the Precambrian metasediments (Deadwood Formation and Tertiary age intrusives) - the bedrock unit; and the sedimentary sequence found north of the mine in the Lost Gulch area. Flow in the alluvial/colluvial unit is unconfined and is generally toward Bear Butte Creek. Flow in the bedrock unit is generally confined and controlled by secondary porosity and permeability induced along shear, fracture, brecciated zones and geologic contacts. Due to structural control, there are several perched zones in the bedrock unit. The sedimentary unit is semi-confined with water found in arkosic zones and limestone fractures and cavities. Recharge to the aquifer zones is locally controlled by a groundwater mound located just west of Strawberry Creek on the divide between Strawberry Creek and Two Bit Gulch. Groundwater quality in the alluvial/colluvial aquifer is poor to fair and is generally a calcium and magnesium bicarbonate with high secondary alkalinity. Due to the proximity of the proposed mine to old mine workings, metals and TDS concentrations are typically above the recommended primary and secondary drinking water standards. Bedrock water quality is fair to good and is generally a calcium and magnesium carbonate and bicarbonate water with moderate secondary alkalinity. The groundwater supply in the area is not dependable and, except for local domestic wells, is not used extensively in the area.

A description of existing water resources in the study area will discuss both surface water and groundwater. It is expected that sufficient baseline information already exists and no new data collection will be necessary to describe the existing water resources in the area (with the possible exception of the postmining groundwater/surface water

interactions in the pit area). All existing data and reports used by ENSR will be verified to ensure their integrity. The following topics will be discussed relating to the baseline surface water hydrology of the area:

- The flood hydrology of the area.
- Annual surface water yield of the area.
- Historic use and consumptive use of surface water in the area.
- Surface Water Quality.
- Stream morphology and erosional stability in the area.

The following topics will be discussed relating to the baseline groundwater hydrology of the area:

- The hydrogeologic setting.
- Physical aquifer properties.
- Groundwater quality.
- Historic aquifer drawdown and recharge quantities.
- Alternative water sources.
- Groundwater/surface water interactions.
- Historic use and consumptive use of the aquifer waters.

Once a baseline is established, potential impacts to water resources from the construction and operation of the Gilt Edge Expansion Project will be examined. The majority of this work has also been completed in the various reports prepared by Brohm and supplied to ENSR. These analyses will be verified by ENSR to ensure their integrity. Among potential impacts to water resources to be considered are the following:

- Effects on surface water quality (e.g., acid mine drainage, metals contamination and especially impacts associated with cyanide). Comparisons will be made with existing water quality, expected impacts, and applicable state water quality criteria.
- Water quality impacts associated with sediment production and control. Erodibility of soils will be evaluated for the area and a qualitative determination made on the potential impacts of sediment production resulting from the mine construction and operation.

- Increased withdrawal and consumptive use of water and effects on local water users in the area. Anticipated drawdowns caused by the mine will be examined and evaluated in terms of the effect on water users in the area.
- Potential contamination of underlying aquifers resulting from seepage from the tailings pond and leaching from waste rock areas (e.g., acid mine drainage, metals contamination, and impacts associated with cyanide).
- Potential surface water and groundwater impacts from the pit being left open and refilling after mining to form a lake (a comprehensive modeling and analysis effort to thoroughly evaluate this potential impact is being considered as a supplement to the EIS preparation).
- Effects of water use on groundwater recharge.

ENSR will analyze these potential impacts in a qualitative manner and quantify impacts where possible.

Significance criteria will be defined and applied to potential impacts to determine the importance of those impacts. Criteria will be based on standards used in previous studies and on the professional judgment of ENSR's resource specialists. Whenever possible, the magnitude and duration of the impacts will be quantified. Mitigation measures will be developed for significant impacts.

2.6.3 Geology and Soils

2.6.3.1 Geology

Overview. ENSR will collect information on the geology of the site and vicinity from existing data as available from Brohm, the BBNF, USGS, and other sources as appropriate. Such information will consist of geologic maps and stratigraphic sections, cross-sections, summary lithological descriptions, and topographic and structural information. Information concerning faulting and seismic risk also will be compiled.

Objectives. Specific objectives relating to the geology studies will be to:

- Determine if existing data are adequate and collect additional data should this be necessary.

- Describe the existing geologic setting.
- Determine to what extent the project may be affected by seismic or other geologic hazards.

Approach. ENSR will use the above information to evaluate the potential for seismicity and other geologic hazards in the project area. If significant hazards exist, ENSR will work with Brohm and the BBNF to evaluate design features needed for the proposed project.

2.6.3.2 Soils

Overview. The soil assessment will be used to evaluate the potential impacts of mine, mill, and tailings impoundment development on the soil resource, and to assist the vegetation and wildlife resource personnel in understanding the relationships between soils, vegetation, and wildlife habitat.

Objectives. The objectives relating to the determination of impacts to soils are to:

- Determine if existing data are adequate and if additional data need to be collected.
- Describe existing soil conditions.
- Determine the adequacy of topsoil quantity and quality for reclamation (Additional mapping, sampling, and lab analyses recommended by ENSR - see Section 2.4.2).
- Determine potential for and possible extent of soil contamination due to the project.

Approach. Reconnaissance surveys and regional soils data available from the BBNF and SCS will be used as primary sources of data to familiarize ENSR personnel with the soils of the proposed project area. Appropriate BBNF and SCS staff will be interviewed with regard to applicable erosion control and revegetation techniques in the area.

The effects of the proposed project on the soils will be evaluated by comparing existing soil characteristics to a set of significance criteria developed in cooperation with the appropriate agencies. Soil characteristics from which significance criteria will be derived include:

slope, depth to rock and stoniness, internal drainage, texture, structure, climatic regime, and stability of the underlying geologic material.

Mitigation. Potential soils and reclamation impacts will be assessed by assimilating soils, geology, and vegetation conclusions for the proposed project. The end result will be a qualitative discussion of potential impacts. Potential mitigation measures will be evaluated on their ability to reduce erosion losses to a value near or within natural soil losses as calculated by Universal Soil Loss Equation (USLE) variables. This will be done by choosing several of the major affected soil units and applying USLE values derived for an array of erosion control measures until the equation result is approximately the soil loss tolerance limit for the soil type. Additional stabilization and revegetation techniques will be recommended where appropriate to aid in achieving the land use objectives for the reclaimed area.

2.6.4 Wildlife and Fisheries

2.6.4.1 Wildlife

Overview. Wildlife issues for the Gilt Edge Expansion Project will be reviewed by ENSR. Principal issues to be addressed include potential for state and federal threatened or endangered wildlife species, and crucial habitat areas for game species, especially elk and white-tailed deer. Site-specific wildlife data collected by OEA Research and the white-tailed deer steering committee will be used in the impact assessment and in assuring compliance with the Eagle Protection Act.

Objectives. The objectives of the wildlife program are designed to meet the regulatory requirements of the South Dakota Fish, Game, and Parks Department and BBNF. The primary objectives are to:

- Verify the presence or absence of nesting raptors and other sensitive species in affected areas (More detailed sensitive animal clearance surveys are recommended, see Section 2.4.2).
- Assess direct impacts of construction and operation on wildlife.

- Assess indirect impacts related to noise, human presence, and possible exposure to hazardous materials.
- Assess secondary impacts related to increased hunting demand and other factors related to population growth.
- Develop a mitigation plan to reduce or eliminate anticipated impacts.

Approach. Direct impacts related to habitat loss will be assessed from a vegetation map and an overlay of the project facilities. The projected construction disturbance will be itemized for each habitat type and used to determine which wildlife species will receive the greatest impact, based on relative abundance estimates (if available) of individual species by habitat.

Indirect and secondary impacts may be of more concern than the direct impacts resulting from facility construction. Secondary impacts to be addressed include: potential exposure to contaminated materials (e.g., the tailings impoundment); noise impacts related to human activity; effects of traffic on wildlife (e.g., road kills); effects of potential increased harvest of wildlife due to road improvements; and potential increases in game harassment.

Mitigation. Mitigation measures will be developed to reduce adverse impacts. Potential mitigation may include fencing of tailings disposal areas and other hazardous areas to preclude wildlife use, improvement of off-site habitat, and implementation of traffic control measures.

2.6.4.2 Fisheries

Overview. Impacts to existing fisheries resources will be analyzed. Resource studies will include direct effects to fish as well as indirect effects related to changes in habitat and food sources (benthic macroinvertebrates). Streams with potential to be impacted by the project include Strawberry Creek and Bear Butte Creek. To ENSR's knowledge, Strawberry Creek is not stocked by the state. Bear Butte Creek is stocked by the state with rainbow trout and contains no naturally reproducing trout. This cursory information will be verified by contact with the South Dakota Game, Fish, and Parks Department.

Objectives. Major objectives of the fisheries study will be to:

- Verify the aquatic life currently present in the streams potentially affected by the project.
- Assess direct and indirect impacts to the aquatic life and their habitats due to construction and operation of the project.
- Assess secondary impacts resulting from increased fishing related to increased population in the area.
- Develop a mitigation plan to reduce or eliminate any identified significant impacts.

Approach. Direct impacts to fish and other aquatic life may be related to increased turbidity and suspended solids in nearby streams. The potential for accidental releases of toxic materials will be evaluated as well as the potential for leaching of toxic materials from the waste rock and tailing disposal areas.

Indirect impact evaluation will include potential loss of habitat due to stream flow alteration and siltation. Additional impacts to the current stocking program resulting from fishing pressure will also be evaluated.

Mitigation. Mitigation measures will be developed if significant impacts are identified. Such measures might include additional erosion control and more stringent safeguards to prevent accidental toxic releases.

2.6.5 Vegetation

Overview. The Brohm Mining Corporation's proposed Gilt Edge Expansion Project will have direct vegetative impacts on-site and potential indirect impacts off-site. Direct on-site impacts will occur due to construction of project facilities, while potential off-site impacts could occur in areas where moisture regime, grazing patterns, land use, or available seed sources are altered by project activities.

ENSR's basic methodology for assessing both on-site and off-site impacts will be through a review of the on-going vegetation survey by OEA and other pertinent literature such as that of the BBNF, South Dakota Natural Heritage Program, and other state agencies.

Objectives. The major objectives of the vegetation program are to:

- Prepare a vegetation map of the project area which highlights areas that could be affected;
- Determine if any rare plant species or important plant communities occur in the project area (more detailed sensitive plant species clearance surveys are recommended, see Section 2.4.2); and
- Determine if impacts to vegetation will seriously affect wildlife habitat on a local basis.

Approach. Vegetation studies personnel will interact closely with the BHNF and state agencies to evaluate reclamation alternatives and to develop reclamation guidelines. Short- and long-term vegetation impacts will be considered. If rare plants may be affected, ENSR will develop mitigative measures in cooperation with the BHNF.

2.6.6 Cultural Resources

Overview. The principal objectives of the cultural resources investigation are to assess the relative impacts of various proposed project components and alternatives using existing survey and evaluative data, and to develop mitigative measures which take into account both the nature of the cultural resources and specific project designs. Three principal types of cultural resources are identified for the purposes of this study, all of which will be taken into consideration: prehistoric (archaeological) sites, historic sites, and sites of religious significance to contemporary Native Americans.

Several issues are identified which will provide technical direction to cultural research. Those listed are general issues which potentially affect all areas affected by project facilities. The issues cited are regarded as most important but do not necessarily comprise a complete listing of specific technical concerns pertinent to cultural resources.

Significant issues identified at this time include:

- Loss or disturbance of cultural resource sites as a consequence of construction or maintenance of project facilities. Significant loss of cultural data may occur as a result of emplacement of project facilities or from other directly associated activities. This type of impact tends to occur in

the earlier phases of a project and is potentially the most devastating to the resources.

- Potential adverse effects on Native American cultural values. This issue is usually most sensitive on Indian reservations, but is potentially relevant in all areas affected by the project. It pertains principally to sites or areas of religious significance but may also involve more general cultural concern, e.g., sites important to a particular group's historic development (i.e., the Black Hills area).
- Secondary effects on cultural resources are more difficult to identify or predict than direct impacts, but may also be very important. Secondary, or indirect impacts accrue from increased long-term exposure of cultural sites as a result of project-related activities (e.g., improved public access to an area, heightened visibility, and accelerated soil erosion). In the present context, secondary impacts could occur as a consequence of development and use of specific utility corridors.
- Cumulative effects on cultural resources. Due to continuous expansion of a development area or usage of a utility corridor, impacts may be compounded to particular cultural resources or resource locations.

Objectives. The objectives of the cultural resource studies will be to:

- Evaluate existing data and determine if additional data are necessary.
- Describe existing cultural resource sites in the affected environment.
- Determine the relative significance of identified cultural sites and determine suitability of sites for inclusion into National Register of Historic Sites.
- Assess impacts of the proposed project on cultural resources identified in baseline studies.
- If important sites are found, determine appropriate mitigation measures.

Approach. Assessment of project impacts would be conducted on a case-by-case basis for each project component or alternative and each known cultural resource. Impacts to sites are defined as direct, indirect (secondary), or cumulative. A key concept in assessment of impacts is that of site significance. Historic preservation statutes ultimately protect only those sites deemed to be legally significant, i.e., those which are enrolled on or meet the eligibility criteria of the National

Register of Historic Places. Because relatively few sites are actually on the National Register, it will be necessary to rigorously apply the criteria to most known sites affected by the proposed project. Although National Register evaluations will have been undertaken for some sites, it is anticipated that the majority have not been evaluated. Assessment of significance will be conducted in the context of regional research frameworks, employing available state and area research designs sanctioned by the SHPO and BHNH.

Once systematic site-by-site evaluation has been conducted, impact assessment will focus on those properties which are known or appear to be significant per National Register criteria. Further evaluation procedures may be necessary for some resources. Comparison of relative impacts of various project alternatives will then focus on known significant sites, the probabilities of encountering additional sites of a similar nature, and the projected total effects of such impacts.

Mitigation. Mitigation planning will be keyed directly into a type of anticipated impact (e.g., direct, indirect, or no effect) and site significance (integrity, research potential). The latter concept also requires consideration of site size and complexity, since mitigation options tend to be more limited when dealing with large, internally complex (e.g., deeply stratified or architectural) sites. Factors relating to significance and projected impact will then provide a basis for determining appropriate mitigation measures.

As a general rule, avoidance and protection are legally regarded as the desirable mitigation measures for significant cultural sites; however, the requirements of construction operation must also be taken into consideration. Alternative levels of mitigation effort can be implemented individually or in combination depending upon the significance of an archaeological site, its relative complexity, and the nature of project impacts.

2.6.7 Socioeconomics

Overview. The proposed Gilt Edge Expansion project is located in Lawrence County, approximately 5 miles southeast of Deadwood and Lead.

Potential effects from development of the project are related primarily to tourism, employment, population, housing, public facilities and services, and the tax bases. Principal socioeconomic issues of concern center on available housing, community facilities, and services near the proposed project site, particularly the communities of Lead and Deadwood; and on potential impacts to the local tourism industry.

Objectives. The specific objectives of the socioeconomic discipline are to:

- Inventory and describe the existing socioeconomic conditions within the area potentially affected by the proposed project including population, economic base, employment, community infrastructure, and transportation.
- Forecast socioeconomic changes within the study area resulting from the proposed project.
- Evaluate the capacity of existing and proposed community infrastructure systems (public and private community facilities and services) to meet the projected demands of the levels of development described above.
- Identify mitigation measures that might alleviate adverse effects associated with the projected levels of development.

Approach. Specific parameters to be addressed in the socioeconomic assessment include the following:

- Employment and Population Impacts Projection. An economic base approach will be used to project total employment and population impacts. This method develops an employment multiplier (the ratio of direct to indirect employment) from which total employment levels can be derived. A set of factors are then used to project the population impacts associated with these employment levels. These population projections will be added to baseline population projections to determine total population levels. The employment and population multipliers to be applied to the Gilt Edge Expansion project will be developed from existing state and local projections, and from historic data for similar impact areas in the region.

The total project-related population will be distributed among the affected communities based on access and proximity to the proposed mine, the availability of housing, infrastructure capacity, and other amenities. The population projections and distribution resulting from this analysis will be combined with available projections of baseline growth to obtain cumulative population and employment estimates, which will be used as the

basis for the subsequent assessment of public services and fiscal impacts on local communities and taxing jurisdictions.

- Community Infrastructure Assessment. Existing facilities and services in affected communities will be evaluated to determine their capacity and use levels. This will be done to identify and quantify existing capacity surpluses or deficiencies. Project-related and cumulative infrastructure demands will be forecast for each affected community. A set of tables will compare projected infrastructure demands against projected capacity levels, including funded capital improvements such as expansion of existing water and wastewater treatment plants. Existing and projected capacity constraints or expansion capabilities will be easily identifiable.
- Fiscal Analysis. The existing financial status of Lawrence County, affected local communities, local school districts, and any other affected taxing jurisdictions will be described based on state and local data documenting their existing mill levies, property tax revenues, bonded debt and available bonding capacity, and sales and special tax revenues as compared with current budgets.

Revenues generated by the project will be projected based on state tax laws and distribution formulas for allocating gross proceeds, property, and other taxes among the affected taxing jurisdictions. Projected revenues will be compared with anticipated project-related costs based on current budget practices and facility and service needs identified in the infrastructure assessment.

- Transportation Analysis. An analysis of the existing transportation network will be undertaken to determine the current operating level of service on highways with access to the project. Primary access to the facilities is via U.S. Highway 385. For this highway, traffic demand versus operating capacity relationships will be computed based on existing geometrics, prevailing vehicle demand loadings, and operating characteristics. Level of service will be calculated from demand-capacity ratios using the methodology suggested in the 1965 Highway Capacity Manual. Information on traffic volumes, operating conditions, and roadway geometry will be obtained from the South Dakota Department of Transportation.

The construction employee and goods movement transportation demand generated by the project will be forecast for the highway network in the vicinity of the Gilt Edge Expansion Project for key periods of the day including peak hour and an average off-peak period. The project-generated demand will be analyzed in relation to existing traffic demand volumes to estimate the degree of probable impacts on level of service, along with determination of any limitations in roadway geometry. A comparable analysis will be performed for the operational period if the scale of operations traffic warrants, based on the results of the construction period analysis. Effects of

project-related traffic on the condition and maintenance requirements for the local road system will also be estimated.

Mitigation. If significant adverse socioeconomic impacts are projected, a framework of potential mitigation measures will be developed to address the impacts. The probable effectiveness of the impacts will be evaluated. Mitigation measures will be developed based on ENSR's experience analyzing mining development on similar projects.

2.6.8 Noise

Overview. Noise levels generated by the proposed project will be controlled to meet OSHA standards within the facility work area. The noise assessment will determine whether noise generated by the project would exceed standards at the nearest sensitive receptors.

To adequately characterize the environmental setting for the purpose of assessing noise impacts, it is necessary to identify: 1) noise sensitive receptors, 2) noise sources, 3) special terrain features, and 4) ambient noise levels. Noise sensitive receptors and existing noise sources will be identified through consultation with Brohm and BHNF personnel and by ENSR personnel on site for various reconnaissance efforts. Terrain features will be identified from topographic maps. Ambient noise levels will be estimated from literature sources, from ENSR file data on similar remote areas and from any available data previously obtained in the area by Brohm, BHNF, or state agencies.

Objectives. The objective of the noise assessment is to assess the noise impacts from the proposed project on sensitive noise receptors such as residences in the study area.

Approach. The basic methodology for assessing noise impacts from project activities involves comparing project-generated noise with existing ambient noise levels and with applicable standards, if available. ENSR will develop project noise generation estimates from project description scenarios and equipment profiles supplemented with data from EPA reference publications and ENSR files on similar projects. NOISECALC, a sound propagation model, will be used to estimate noise effects of the

project on the nearest sensitive receptors. Measures will be recommended to mitigate noise impacts in excess of allowable standards.

Mitigation. Measures will be recommended to mitigate potential noise impacts in excess of allowable standards.

2.6.9 Visual Resources

Overview. The BHNH Visual Management System (VMS) procedures will form the basis of the inventory and impact assessment process for the Gilt Edge Expansion Project. The existing VMS inventory data will be reviewed and supplemented by more detailed project level inventory data. This will include typical Visual Absorption Capability (VAC) variables which help identify the physical effect of the project on the landscape and the way in which these physical effects will be seen from sensitive viewpoints. These visual effects will be compared to the existing BHNH Visual Quality Objectives (VQO) designations to identify the level of visual impact and determine appropriate locations for mitigation.

Objectives. Important objectives of the visual resource analysis include the following:

- Coordination of the analysis process with the BHNH landscape architect and Brohm engineers.
- Determination of the sensitive viewpoints in view of, and affected by, the project.
- Systematic analysis of the way in which the various project components physically affect and change the landscape.
- Systematic determination of the affected sensitive viewpoints to determine the way in which they will see the landscape modifications.
- Determination of whether the visual modifications meet the visual management guidelines (VQO) of the project area.
- Identification of effective and feasible mitigation measures for appropriate areas of high visual impact.

Approach. Contact will be made initially with the BHNH landscape architect and other appropriate staff to obtain a copy of the current

data. This information will contain landscape and viewer data at an area-wide planning scale, as well as the visual management designations (VQO) for the study area. This information will require supplemental data collection appropriate to a project level analysis. Beyond this, the proposed study process will follow established Forest Service VMS practices.

At least one site visit will be conducted during which three objectives will be met. The first will be to meet with the BBNF landscape architect and other appropriate staff to coordinate and assure that any specific agency concerns are addressed through the study process and to obtain a more detailed understanding of the project area and potential issues. The second objective will be to review the project plans on site and, if necessary, to meet with project representatives on site to obtain a clear understanding of the project and its proposed development and reclamation plans. The third objective will be to collect detailed landscape and viewer data.

The impact assessment process will utilize the information collected on this site visit along with topographic maps and aerial photographs in the office to assess visual impacts and identify feasible and effective mitigation measures. Computer terrain modeling and visual simulation will be used to aid this process.

In a brief overview, the impact assessment will be conducted as follows: Detailed project, landform, and vegetation data will be evaluated for each project component and location to systematically assess the way in which the landscape will be physically modified by the proposed project or various alternatives. Required data will include many of the standard Forest Service VAC elements such as slope; soil and subsoil color; landform pattern; and vegetation height, density, and pattern. The next step will be to utilize the detailed viewer data collected, such as viewer distance, type, duration of view, backdrop, angle of view, and landscape - project scale specific to each sensitive viewpoint, to systematically assess the extent and degree to which the project modifications will be seen. This will be augmented by selected seen area plots and 3-D perspectives of the proposed mined landscape as seen from sensitive viewpoints. These will be generated on an in-house enhanced version of the PERSPECTIVE PLOT program. One view will be selected, for

which a before and after photo simulation will be generated. The perspective plots will serve as the basis to assure scale and location accuracy of the completed photo simulation.

The type and degree of visual impacts will then be determined by comparing the expected visual effects to the Forest Service-derived VQO for the project area. The detailed landscape, project, and viewer data collected and evaluated throughout the study will provide the basis to identify those measures which can most effectively be employed to reduce those visual impacts exceeding the VQO for the area.

2.6.10 Land Use

Overview. The land use analysis will evaluate potential conflicts between the project and existing land ownership in the study area; adopted federal, state, and local land use plans, policies and regulations; and existing land uses, such as dispersed recreation and livestock grazing. The land use assessment will also investigate the availability and location of developable land, particularly in the vicinity of Deadwood and Lead, to accommodate the population growth projected in the socioeconomic assessment.

Objectives. Specific objectives of the land use component are to:

- Compile existing land ownership and existing and planned land use data from the BBNF and Lawrence County.
- Review existing BBNF land and resource management plans and Lawrence County land use plans and regulations to identify potential conflicts with the Gilt Edge Expansion Project.

Approach. Federal, county, and local land use plans, including the 1983 BBNF Land and Resource Management Plan; the 1976 Lawrence County Comprehensive Plan; the 1985 City of Lead Comprehensive Plan; and the 1971 City of Deadwood Comprehensive Plan (which is currently in the process of being updated), will be reviewed to identify potential conflicts. Federal, county, and municipal representatives will be interviewed to update and supplement the published materials.

Mitigation. Mitigation recommendations will be developed to minimize potential conflicts with land ownership and existing and planned land uses.

2.6.11 Recreation

Overview. A recreation resources study component is included to address potential secondary impacts stemming from increased population levels. Recreation analyses are considered important because of the potential for increased demand for limited opportunities. The analysis will consider both dispersed recreational opportunities, particularly in the vicinity of the project on BHNF land, and recreational facilities within affected communities, including the cities of Deadwood and Lead, and Lawrence County. The potential effects of the Gilt Edge Expansion Project will be shown by comparing project-related changes in the supply and demand of specific types of recreation opportunities with existing and projected use patterns.

Objectives. Specific objectives of the recreation component are to:

- Compile existing data on recreational opportunities and demand in Lawrence County and potentially affected communities, including Deadwood and Lead.
- Identify any direct conflicts between recreation resources and the proposed project.
- Assess indirect impacts on local recreation resources resulting from population increases. Identify potential mitigation measures, if needed.

Approach. The recreation analysis will be based on existing data on recreational opportunities and demand on BHNF land, in Lawrence County, and in the cities of Deadwood and Lead; review of data in BHNF and South Dakota Game, Fish and Parks Department files; and interviews with BHNF, state, and local officials.

Mitigation. Mitigation recommendations will be developed to minimize potential conflicts with recreation resources.

2.7 Prepare Major EIS Sections

This task will be to prepare the EIS which will be written by resource specialists from information obtained during the field reconnaissance and from existing studies and surveys. Major emphasis will be placed on producing a concise document that clearly describes the anticipated environmental consequences of implementing the proposed Plan of Operations or alternatives.

Cumulative impacts of the proposed project in combination with existing operations will be addressed as one aspect of the Environmental Consequences chapter. This topic is expected to be very important because this EIS will be the first one addressing mine development within the Black Hills National Forest. ENSR realizes the potentially sensitive nature of the cumulative impacts issue and has dealt with this issue on several other major EISs. ENSR suggests using a comparative approach for this analysis rather than a comprehensive cumulative impact study. The comparative approach would focus on the incremental impacts of Brohm's Gilt Edge Expansion Project relative to existing environmental conditions in the vicinity including impacts from other nearby operations. This approach has been used successfully on numerous similar projects in the midst of existing development. The state Cumulative Environmental Evaluation (CEE) study may also be used in evaluating cumulative impacts depending on completion date of the CEE report.

2.8 Prepare Additional EIS Sections

Additional EIS sections will be prepared to conform to the BBNF format for EISs. A tentative outline for the Preliminary Draft EIS (PDEIS) is presented in Figure 2-1.

Technical appendices to the EIS will provide supporting documentation, where required. Appendices will be prepared for those analyses requiring detailed information from the data collection and impact analysis tasks that are too technical or lengthy to be included in the body of the EIS itself. Technical files will be maintained by all disciplines. The content and format of the technical files will vary among disciplines according to professional standards for the discipline and the specific information collected. In general, the technical files will include: 1) the raw data or other information sources used in

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY	
LIST OF TABLES	
LIST OF FIGURES	
LIST OF MAPS	
1.0 INTRODUCTION	1-
1.1 History and Background	1-
1.2 Purpose and Need	1-
1.3 Authorizing Actions	1-
1.4 Environmental Review Process	1-
2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION	2-
2.1 Proposed Action	2-
2.1.1 Project Overview	2-
2.1.2 Project Description	2-
2.1.3 Emission - Pollution Control	2-
2.1.4 Environmental Considerations and Analysis	2-
2.2 Property Ownership Alternatives (Patenting Claims, Land Exchange)	2-
2.3 Siting Alternatives (Tailings Impoundment, Waste Dumps, Facilities)	2-
2.4 Process Alternatives (Mining, Milling)	2-
2.5 Reclamation Alternatives	2-
2.6 No Action Alternative	2-
2.7 Interrelationships with Other Projects	2-
2.8 Alternatives Considered but Eliminated from Detailed Analysis	2-
2.9 Comparison of Impacts for the Proposed Action and Alternatives	2-
3.0 AFFECTED ENVIRONMENT	3-
3.1 Proposed Action	3-
3.1.1 Air Resources	3-
3.1.2 Water Resources	3-
3.1.3 Geology and Soils	3-

Figure 2-1. Outline of the PDEIS

TABLE OF CONTENTS

	<u>Page</u>
3.1.4 Wildlife and Fisheries	3-
3.1.5 Vegetation	3-
3.1.6 Cultural Resources	3-
3.1.7 Socioeconomics	3-
3.1.8 Noise	3-
3.1.9 Visual Resources	3-
3.1.10 Land Use	3-
3.1.11 Recreation	3-
3.2 Property Ownership Alternatives	3-
3.2.1 Air Resources	3-
3.2.2 Water Resources	3-
3.2.3 Geology and Soils	3-
3.2.4 Wildlife and Fisheries	3-
3.2.5 Vegetation	3-
3.2.6 Cultural Resources	3-
3.2.7 Socioeconomics	3-
3.2.8 Noise	3-
3.2.9 Visual Resources	3-
3.2.10 Land Use	3-
3.2.11 Recreation	3-
3.3 Siting Alternatives (Format for this and subsequent sections follow 3.2)	3-
3.4 Process Alternatives	3-
3.5 Reclamation Alternatives	3-
3.6 No Action Alternative	3-
4.0 ENVIRONMENTAL CONSEQUENCES	4-
4.1 Proposed Action	4-
4.1.1 Air Resources	4-
4.1.2 Water Resources	4-
4.1.3 Geology and Soils	4-
4.1.4 Wildlife and Fisheries	4-
4.1.5 Vegetation	4-
4.1.6 Cultural Resources	4-
4.1.7 Socioeconomics	4-

Figure 2-1. Outline of the PDEIS (Continued)

TABLE OF CONTENTS

	<u>Page</u>
4.1.8 Noise	4-
4.1.9 Visual Resources	4-
4.1.10 Land Use	4-
4.1.11 Recreation	4-
4.2 Property Ownership Alternatives	4-
4.2.1 Air Resources	4-
4.2.2 Water Resources	4-
4.2.3 Geology and Soils	4-
4.2.4 Wildlife and Fisheries	4-
4.2.5 Vegetation	4-
4.2.6 Cultural Resources	4-
4.2.7 Socioeconomics	4-
4.2.8 Noise	4-
4.2.9 Visual Resources	4-
4.2.10 Land Use	4-
4.2.11 Recreation	4-
4.3 Siting Alternatives	4-
4.4 Process Alternatives	4-
4.5 Reclamation Alternatives	4-
4.6 No Action Alternative	4-
4.7 Cumulative Impacts	4-
4.8 Mitigation Measures	4-
4.9 Unavoidable Adverse Impacts	4-
4.10 Relationship Between the Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity	4-
4.11 Irreversible/Irretrievable Commitment of Resources	4-
5.0 CONSULTATION AND COORDINATION	5-1
REFERENCES	R-1
GLOSSARY	G-1
ABBREVIATIONS AND ACRONYMS	G-1
LIST OF PREPARERS	L-1

Figure 2-1. Outline of the PDEIS (Continued)

preparing the EIS sections; 2) the methods, assumptions, and calculations used in impact analysis; 3) Brohm's previous consultants' reports, maps, etc., used in impact analysis; and 4) communication records documenting phone conversations or other information sources.

2.9 Publish Draft and Final EIS

ENSR will publish the draft and final EIS documents in the format and numbers desired by BBNF.

2.10 Public Hearings and Meetings

ENSR's project manager, assistant project manager, and key technical staff, as appropriate, will attend public hearings on the draft and final EIS. In ENSR's experience, the most important public meetings will probably be on the draft EIS. At this stage, most of the key issues will have been identified and presented in the draft document.

Meetings may also be held with important local and state agencies during the course of the EIS preparation. ENSR's project manager and/or assistant project manager will attend these meetings per direction from the BBNF.

2.11 Prepare Responses to Comments of Draft and Final EIS

ENSR will prepare responses to all comments made by the public and local, state, and federal agencies on the draft EIS. Responses to resource specific comments will be prepared by ENSR's resource specialists, whereas comments or concerns of general or procedural nature will be handled by the project manager with input, as necessary, from BBNF.

In addition to preparing a formal response to comments section, ENSR will address substantive comments or concerns that would change the conclusions in the draft EIS by making appropriate modifications in the document before it becomes the final EIS.

2.12 Monthly Meetings

Monthly meetings will be conducted with ENSR, BBNF, and Brohm representatives to: 1) track progress on the preparation of the draft and final EIS; 2) identify additional environmental and engineering

information needs, if any; and 3) determine need for additional baseline data collection.

ENSR understands that additional meetings may be necessary to keep the project on schedule. The need for and scheduling of additional meetings will be made at the regular monthly meetings or during the course of regular interactions between ENSR and BBNF.

3.0 WORK SCHEDULE

ENSR'S proposed schedule to complete the draft and final EIS documents is presented below. This schedule is very tentative and may change due to data collection, and analyses needs to address issues and concerns.

<u>Activity</u>	<u>Finish Date</u>
Scoping Meetings	May 2-4, 1989
Submit Draft Scoping Results (ICOs)	May 22, 1989
Submit Draft Study Plan to JRC EIS Outline Impact Analysis Procedures Draft Significance Criteria	May 30, 1989
ID Team Meeting & ENSR Site Visit Identify Alternatives Identify Baseline Data Deficiencies Finalize Significance Criteria	June 12-13, 1989
Finalize Study Plan (also latest date for project changes that require additional data)	June 23, 1989
Complete Baseline Data Collection and Final Data to ENSR	August 18, 1989
Submit PDEIS	October 13, 1989
Receive Comments on PDEIS	November 17, 1989
Submit DEIS to BBNF	December 20, 1989
Publish DEIS	January 1990
Comment Period Ends	April 1990
Submit PFEIS to BBNF	June 1990
Publish FEIS	August 1990
Record of Decision	August 1990

4.0 KEY PERSONNEL

Key ENSR staff involved on this project include the project management team of Russell Moore and Phil Hackney and the following Task Managers:

Jim Beck	Mine Engineering Design
Howard Gebhart/	
Bob Hammer	Air Resources
Susan Morehouse/	
Maurice Veatch	Water Resources
Jim Nyenhuis	Soils and Reclamation
Ted Boss	Biological Resources (Vegetation and Wildlife)
Ron Sutton	Aquatic Biology
Chris Zier	Cultural Resources
Bill Theisen	Socioeconomics, Land Use, and Recreation
Bernie Strom	Noise
Craig Taggart	Visual Resources

APPENDIX A

GILT EDGE EXPANSION PROJECT EIS
DRAFT SIGNIFICANCE CRITERIA

The impacts evaluated for each environmental discipline or issue area will be classified as significant or insignificant based on the degree of impact as measured against scientific and social criteria. The criteria that follow are derived from regulatory standards, research standards, criteria used in other environmental documents, and on the best professional judgment of agency and resource specialists.

Air Quality

Impacts to air quality would be considered significant if:

- Predicted changes in ambient air quality, including fugitive dust, exceed state air quality standards.
- The point source emissions fail to comply with applicable New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAPS), if applicable.

Water Resources

Impacts to groundwater resources would be considered significant if:

- Potentiometric heads or gradients of aquifers were altered enough to adversely affect established water uses. The magnitudes of changes required to produce adverse effects would vary with specific aquifers and water uses.
- Water quality within any given zone was degraded by introduction of contaminants (e.g., cyanide or heavy metals) or major pH change, thereby affecting established uses or reducing groundwater quality below state standards.
- Surface disturbances would cause enough reduction in annual groundwater recharge to principal aquifers to affect established water uses at local wells and springs.

Impacts to surface water resources would be considered significant if:

- The quantity or quality of stream flows were modified to the extent that 1) the water quality is in violation of state water quality criteria, 2) they would no longer support existing fish populations and other components of the aquatic communities, 3) flows or water quality of Bear Butte Creek or other perennial streams in the area are measurably altered, or 4) existing economic and recreational uses are affected.
- Stream channel geometry or gradients were modified in such a way as to produce undesirable effects such as aggradation, degradation, or sidecutting.

- Sediment yield to Bear Butte Creek or other perennial streams in the area increases over existing conditions to the extent that state water quality criteria were violated.
- The probability of flood damage to natural floodplains or structures and facilities was increased as a result of the project.

Geology and Soils

Soil-related impacts would be considered significant if:

- Soil handling and storage practices allow increased erosion rates or reduce soil productivity preventing successful reclamation and revegetation of affected areas.
- Soil topsoil materials in all projected disturbance areas were not identified and salvaged for future reclamation activities.

Wildlife and Fisheries

Impacts to wildlife and fish would be considered significant if:

- Project disturbance results in a loss of local key big game habitat areas such as calving areas and winter range.
- Planned reclamation would not reestablish vegetative cover and productivity on reclaimed areas compatible with a future land use as wildlife habitat.
- Project disturbance would result in impacts to state or federally classified rare, threatened, or endangered wildlife or fish species.

Vegetation and Reclamation

Vegetation-related impacts would be considered significant if:

- Project disturbance would result in impacts to any state or federally classified threatened or endangered plant species which reduce its population or restrict its range.
- Successful revegetation of affected areas would be considered unlikely or create a high potential for invasion of noxious weeds.

Cultural Resources

Impacts to cultural resources would be considered significant if:

- Any damage or disturbance occurs to a cultural resource site included on or eligible for inclusion on the National Register of Historic places under the National Historic Preservation Act of 1966 as amended.

- Project activities compromise the physical integrity of sites of religious or cultural significance to contemporary Indian groups as protected under the American Indian Religious Freedom Act of 1978, or if such site settings are so altered that religious or cultural values are diminished.

Social and Economic Resources

Social or economic impacts would be considered significant if:

- The project-related change in any population in the study area, community, or Lawrence County is greater than 10 percent during any one year.
- Demand for temporary housing during the construction phase exceeds 95 percent of existing unoccupied supply or temporary housing is not available within a 50-mile radius.
- A change occurs in the Lawrence County tax base becomes greater than 10 percent.
- Permanent demand on other infrastructure exceeds existing unused capacity or local planning standards.

Noise

Noise impacts would be considered significant if:

- Adopted state or local standards would be exceeded.
- Estimated noise emissions would exceed an exterior day-night average sound pressure level (L_{dn}) of 65 dBA at the nearest noise sensitive receptor.

Visual Resources

Visual impacts would be considered significant if:

- The proposed facility would not meet existing applicable visual quality objectives; the visible area would degrade overall visual character.

Land Use and Recreation

Land use impacts would be considered significant if:

- The proposed development is incompatible or inconsistent with land use plans, regulations, or controls adopted by local, state, or federal governments.
- Total recreation demand in Lawrence County, as reflected by the project-related change in population, is projected to increase by 10 percent or more over baseline conditions.
- The project physically disturbs or interferes with access to commonly used recreational sites or local residences.

APPENDIX B

GILT EDGE EXPANSION PROJECT
SUMMARY OF PUBLIC SCOPING MEETINGS AND WRITTEN COMMENTS

EIS Process

Not enough time for public to prepare for project of this size. Additional public meeting requested.

D. Sandidge - D
D. Fierge - D
D. Blum - RC
C. Butts - RC
L. Becker - RC

EIS process period should be delayed until better project detail available to public.

D. Sandidge - D
D. Rogers - RC

Concerned about absence of Native American input to process.

D. Matt - RC
W. Pettis - RC
M. Doyle -

Establish a private steering committee consisting of citizens and environmental groups to assist in development of EIS.

D. Sandidge - D
L. Sandidge - RC

Can FS provide sound staffing to complete EIS?

M. Mathews - RC

Lawrence County commissioners are viewed as ineffective in guarding public interests.

K. Schmidt - RC

What are the costs to government and tax burden for EIS process?

G. Broyles - D
L. Sandidge - RC

To ensure an unbiased study, no contact should be allowed between Brohm and ENSR.

D. Sandidge - D

How will contractors complete unbiased study when Brohm pays bills and conducted proposal solicitation?

D. Rogers - RC
A. Cundal - RC
D. Strom - L

EIS should address cumulative impacts of proposed mine and other mines in the project area.

D. Matt - RC
K. Haines - D
R. Walter - RC
W. Pettis - RC
D. Pay - RC

EIS should address alternative dump sites and tailings site locations, pit reclamation alternatives.

D. Pay - RC
N. Hilding - RC

EIS should address worst-case scenario, particularly with respect to water pollution and health effects.

S. Fredrick - RC

EIS should address long-term maintenance requirements, assess risks, and identify liabilities.

D. Rogers - RC
L. Sandidge - RC
D. Pay - RC

The 1872 Mining law does not apply to Canadian firm.

M. Doyle - RC

ID team should include artist or philosopher to balance input.

K. Brandager - RC
R. Hicks - L
S. Anderson - L
D. Tveidt - L
L. Pedersen - L
R. Kern - L

Engineering

Does the Plan of Operations provide appropriate detail and accurate engineering data?

K. Brandager - RC
D. Sandidge - D
D. Fierge - D

Existing Oxide Project heap leach pad leaks - how can Brohm Operate large project without similar problems?

J. McGinnis - RC
D. Rogers - RC
L. Sandidge - RC
K. Kipke - RC

Operate underground mine as alternative to open pit.

D. Pay - RC
C. Larson - D
M. Doyle - RC

Concerned that 15 years plus is too long an impact period.

K. Brandager - RC

Concern over reliability of drainage system.

L. Sandidge - RC
K. Kepke - RC
D. Guetener - RC

Safeguard against climatic events (e.g., flooding, high winds, freeze-thaw cycle, ice formation on tailings pond) on proposed mining operation.

D. Matt - RC
C. Hyder - RC

What happens to saturated recycled water?

D. Soms - RC

Tremendous volume of material produces only ounces of gold.

G. Heaton - RC

Will sulfide ore be autoclaved and roasted?

J. Erkman

Groundwater/Surface Water

Quantity of water used and water source for mine and possible depletion of water supply to wells, springs, and streams (e.g., Bear Butte Creek).

D. Guetener - RC
D. Pay - RC
S. Baumberger - RC
C. Ryder - RC
D. Rogers - RC
J. Wells - D
J. Ertman - D
L. Tveidt - D
M. German - D
B. Nickish - D
K. Schmidt - RC

Maintaining water quality of surface and groundwater in project area.

D. Pay - RC
M. Darland - D
H. Morrison - D
M. German - D
M. Doyle - RC
R. Kern - L
L. Pedersen - L
L. Hicks - L
D. Tveidt - L
D. Sours - RC

Need a monitoring plan for water quality and quantity during and after mining.

J. Erkman - D
C. Hyder - RC

Objectivity and regional perspective of existing water data base. U.S. government, not Brohm, should supply water data (flows, quality). Utilize U.S. Geological Survey water study data for EIS.

D. Sandidge - D
M. Mathews - RC
K. Kepke - RC

Mining depths may result in contact with aquifers and possible groundwater contamination.

R. Walter - RC
D. Sours - RC
D. Guetener - RC

Aquifer depletion and inability to recharge.

M. Mathews - RC
D. Rogers - RC

Concerned with containment barrier and quality assurance in construction.

M. Mathews - RC

Concerned with State Water Resources Board willingness to relax water quality standards for Brohm's existing Oxide Project.

M. Doyle - RC
D. Soms - RC
K. Kepke - RC

Accuracy of projected water use volumes well below water use of existing mines (i.e., Homestake).

D. Rogers - RC

Need quantification of acid mine drainage relative to ore and waste piles, dust, and pit. Quantify trace elements in waste waters and runoff.	D. Rogers -	RC
	D. Sandidge -	D
	L. Sandidge -	RC
	D. Pay -	RC
	W. Sutcliffe -	RC

Ruby Gulch would be contaminated by residual chemicals in leached ore.	D. Sours -	RC
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Acceptable model should be used in predicting impacts to surface water and groundwater	D. Pay -	RC
--	----------	----

Socioeconomics & Land Use

Potential of mining site to result in toxicity problems requiring public funded cleanup (i.e., Superfund).	D. Sandidge -	D
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Property devaluation.	L. Tveidt -	D
	R. Walter -	RC

Loss of house (cabin) in proposed tailings dam area.	R. All -	D
--	----------	---

Foreign investors.	I. Gurdis -	RC
	D. Fierge -	D
	M. McGinnis -	RC
	M. Doyle -	RC
	W. Pettis -	RC
	R. Hanna -	D
	R. Kern -	L
	S. Anderson -	L
	R. Ridge -	L
D. Tveidt -	L	
P. Seversen -	L	

What percentage of the project employment will be from South Dakota?	D. Sandidge -	D
--	---------------	---

Socioeconomic benefits do not warrant disturbance associated with proposed mine.	S. Hobbs -	RC
	R. Walter -	RC

Concerned with lack of economic development and reduced job opportunities (opportunity).	A. Oakes	
	K. Baumgartner -	RC

What compensation does FS and public receive from use of land?	K. Kepke -	RC
	R. Walter -	RC

Impacts to Native Americans use of Bear Butte for tribal activities.	D. Pay -	RC
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Impact of proposed project on multiple use on FS (public) land.	R. Fort -	D
	S. Baumberger -	RC

Increased traffic (amount and speed) along Gilt Edge Road and associated safety concerns in residential areas (i.e., Strawberry Subdivision)	R. Hanna -	D
	K. Moore -	L
Future expansion of proposed mine on federal land with established mineral claims.	K. Brandager -	RC
Brohm should exercise land exchange to achieve ownership of lands disturbed.	C. Hyder -	RC
Impacts to recreational use of mine area.	W. Pettis -	RC
	D. Pay -	RC
	L. Pedersen -	L
	K. Moore -	L
	G. Shrader -	RC
Impact to grazing activities.	L. Tveidt -	D

Soils/Reclamation

What is to guarantee that successful reclamation will take place and who sets reclamation standards?	C. Larson -	D
	G. Shrader -	RC
	D. Rogers -	RC
	R. Ridge -	L
	D. Guetener -	RC
	P. Seversen -	L
	S. Anderson -	L
Reclamation bond may not be sufficient to cover reclamation costs.	M. Mathews -	RC
	C. Hyder -	RC
Feasibility of pit reclamation questioned.	D. Rogers -	RC

Wildlife/Fisheries

Impacts to elk rearing and calving areas and to mountain goats.	D. Sandidge -	D
Loss of wildlife habitat and effects on wildlife.	H. Morrison -	D
	R. Hanna -	D
	D. Pay -	RC
	L. Pedersen -	L
Impacts to fisheries in Bear Butte Creek.	M. German -	D
Impact on proposed elk transplant.	K. Schmidt -	RC
Potential impact to eagles in project vicinity.	K. Brandager -	RC

Visual/Aesthetics

Quality of life will be impacted.

D. Sandidge - D
M. German - D
K. Miller - RC

Project will be visible from Bear Butte and other nearby ridges.

L. Sandidge - RC
K. Moore - L

Impact on scenic value in project area and vicinity.

K. Kiplee - RC
K. Schmidt - RC
H. Morrison - D

Air Quality

Control of dust, toxic emissions, and noise during mine operation.

M. German - D
G. Broyles - D
S. Baumberger - RC
K. Moore - L
K. Schmidt - RC

Cultural Resources

Impacts to historical site (Lost gulch cabins) in proposal tailing dam area.

M. German - D

Anchor Hill fire lookout should be placed on historic registry.

L. Sandidge - RC

D - Deadwood Public Scoping Meeting - May 2, 1989

RC - Rapid City Public Scoping Meeting - May 3, 1989

L - Comment letters received by BBNF



Formerly ERT

June 2, 1989

ENSR Consulting
and Engineering

1716 Heath Parkway
Fort Collins, CO 80524
(303) 493-8878

Mr. David Blackford, District Ranger
Nemo Ranger District - USFS
460 Main
Deadwood, SD 57732

Dear Mr. Blackford:

Enclosed is ENSR's monthly progress report covering activities conducted during May on the Gilt Edge Expansion Project.

If you or Don Murray have any questions on this submittal or any of ENSR's activities, please do not hesitate to call me or Phil Hackney.

Sincerely,

A handwritten signature in cursive script that reads 'Russell T. Moore'.

Russell T. Moore, Ph.D.
General Manager

RTM/ri

Ref: 1063-001

Enclosure

cc: Doug Stewart - Brohm
Dave Cornman - Bechtel

GILT EDGE EXPANSION PROJECT

ENSR Progress Report No. 2

May 1989

Work Completed in May

- Attended public scoping meetings in Deadwood and Rapid City on May 2 and 3rd. Recorded public comments during meetings (Task 100).
- Prepared summary of public concerns voiced at the scoping meetings and expressed in letters addressed to BBNF. This summary included only a portion of the letters received by BBNF (all comment letters will be incorporated in June) (Task 100).
- Completed review of existing baseline data and engineering reports. Identified any data deficiencies that need to be corrected prior to impact analysis. Data gaps were addressed in draft study plan (Tasks 130 & 140).
- Prepared draft study plan and draft significance criteria and distributed to the ID team (FS - 15 copies, State - 12 copies on June 2) prior to the second ID team meeting scheduled for June 12 in Deadwood (Tasks 130 & 140).
- Received additional copies of groundwater reports from Dave Cornman (Task 130).

Work Planned for June

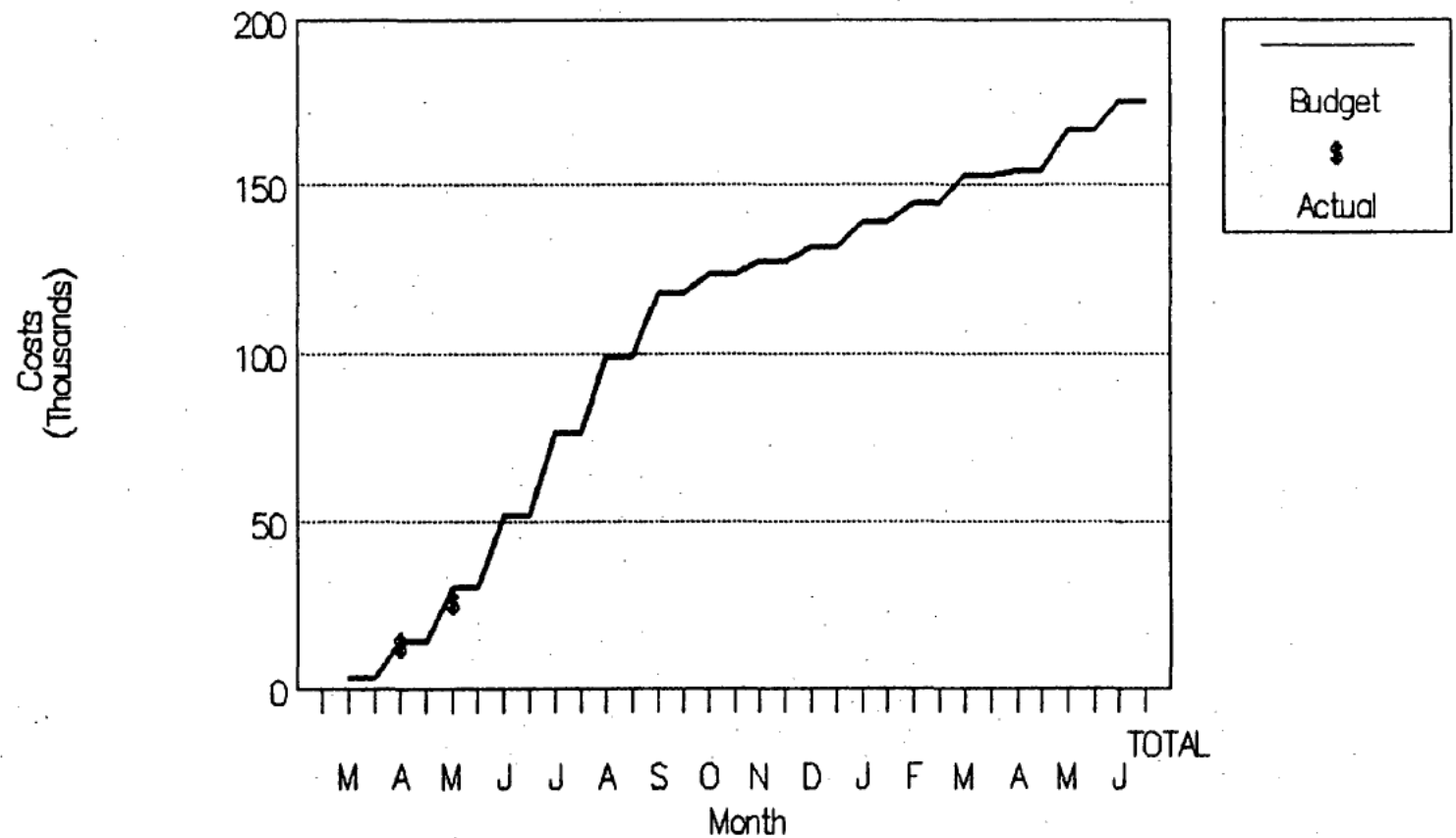
- Attend second ID team meeting on June 12 in Deadwood to discuss draft study plan, draft significance criteria, data gaps, and alternatives to be addressed in the EIS.
- Conduct site visit with key discipline specialists on June 13.
- Finalize study plan based on results of second ID team meeting and likely follow-up discussions among discipline specialists (FS, State, Lawrence County, ENSR).
- Finalize project changes that require additional data collection.

Action Items

- Don Murray to locate socioeconomic report(s) submitted to and approved by the state for mines in Black Hills (e.g., Golden Reward, Wharf). Don will provide ENSR with copies in order to determine nature and detail of analysis required by the state.
- FS/ENSR to determine scale of maps to be presented in EIS. Tentatively agreed upon USGS 1:24,000 topographic maps with reduction.
- ENSR (Maurice Veatch) is preparing supplementary study plan for conducting impact analysis involving fate and transport modeling of soluble contaminants from the pit walls.

CUMULATIVE COSTS FOR EIS

Gilt Edge Expansion Project



**GILT EDGE EXPANSION PROJECT EIS
ENSR LABOR SUMMARY**

May 26, 1989

LABOR		CURRENT MONTH			PREVIOUS MONTH			CUMULATIVE		BUDGETED CURRENT MONTH		PROJECTED ESTIMATE TO COMPLETE	
TASK	NAME	RATE	HOURS	COST	HOURS	COST	HOURS	COST	HOURS	COST	HOURS	COST	
100	(b) (7)(A)	\$19.18	1	\$10 :		\$0 :	1	\$10 :	0	\$0 :	0	\$0	
100	(b) (7)(A)	\$24.99	0	\$0 :	1	\$25 :	1	\$25 :	0	\$0 :	0	\$0	
100	(b) (7)(A)	\$24.99	17	\$412 :	3	\$75 :	20	\$487 :	8	\$200 :	0	\$0	
100	(b) (7)(A)	\$26.68	0	\$0 :	4	\$93 :	4	\$93 :	0	\$0 :	0	\$0	
100	(b) (7)(A)	\$27.95	1	\$14 :	2	\$42 :	2	\$56 :	0	\$0 :	0	\$0	
100	(b) (7)(A)	\$31.75	1	\$16 :	0	\$0 :	1	\$16 :	0	\$0 :	0	\$0	
100	(b) (7)(A)	\$32.50	1	\$16 :	0	\$0 :	1	\$16 :	0	\$0 :	0	\$0	
100	(b) (7)(A)	\$50.77	1	\$51 :	13	\$660 :	14	\$711 :	0	\$0 :	0	\$0	
100	(b) (7)(A)	\$59.38	33	\$1,960 :	28	\$1,663 :	61	\$3,622 :	16	\$950 :	0	\$0	
100	(b) (7)(A)	\$81.15	0	\$0 :	7	\$568 :	7	\$568 :	0	\$0 :	1	\$81	
100	(b) (7)(A)	\$125.03	16	\$2,000 :	18	\$2,251 :	34	\$4,251 :	8	\$1,000 :	0	\$0	
TOTAL TASK 100			69	\$4,479	75	\$5,377	144	\$9,855	32	\$2,150	1	\$81	
120	(b) (7)(A)	\$24.99		\$0 :	0	\$0 :	0	\$0 :	0	\$0 :	4	\$100	
120	(b) (7)(A)	\$59.38	1	\$59 :	0	\$0 :	1	\$59 :	8	\$475 :	23	\$1,366	
120	(b) (7)(A)	\$125.03		\$0 :	12	\$1,500 :	12	\$1,500 :	0	\$0 :	0	\$0	
TOTAL TASK 120			1	\$59	12	\$1,500	13	\$1,560	8	\$475	27	\$1,466	
130	(b) (7)(A)	\$40.63		\$0 :	2	\$81 :	2	\$81 :	4	\$163 :	2	\$81	
130	(b) (7)(A)	\$42.05	4	\$168 :		\$0 :	4	\$168 :	6	\$252 :	4	\$168	
130	(b) (7)(A)	\$45.01		\$0 :		\$0 :	0	\$0 :	6	\$270 :	12	\$540	
130	(b) (7)(A)	\$52.85		\$0 :		\$0 :	0	\$0 :	6	\$317 :	8	\$423	
130	(b) (7)(A)	\$57.40	1	\$57 :		\$0 :	1	\$57 :	6	\$344 :	11	\$631	
130	(b) (7)(A)	\$59.38	1	\$59 :	2	\$119 :	3	\$178 :	4	\$238 :	7	\$416	
130	(b) (7)(A)	\$59.64		\$0 :	2	\$119 :	2	\$119 :	0	\$0 :	6	\$358	
130	(b) (7)(A)	\$73.94		\$0 :		\$0 :	0	\$0 :	0	\$0 :	4	\$296	
130	(b) (7)(A)	\$81.15		\$0 :		\$0 :	0	\$0 :	6	\$487 :	20	\$1,623	
130	(b) (7)(A)	\$125.03	2	\$188 :	3	\$375 :	5	\$563 :	6	\$750 :	3	\$375	
TOTAL TASK 130			8	\$473	9	\$694	17	\$1,167	44	\$2,821	77	\$4,911	
140	(b) (7)(A)	\$21.13	6	\$116 :	0	\$0 :	6	\$116 :	0	\$0 :	0	\$0	
140	(b) (7)(A)	\$24.99	2	\$50 :	0	\$0 :	2	\$50 :	0	\$0 :	0	\$0	
140	(b) (7)(A)	\$28.14	2	\$56 :	15	\$408 :	17	\$464 :	0	\$0 :	0	\$0	
140	(b) (7)(A)	\$40.63	6	\$244 :	2	\$81 :	8	\$325 :	8	\$325 :	0	\$0	
140	(b) (7)(A)	\$42.06	20	\$841 :		\$0 :	20	\$841 :	6	\$252 :	0	\$0	
140	(b) (7)(A)	\$45.01		\$0 :	1	\$45 :	1	\$45 :	16	\$720 :	15	\$675	
140	(b) (7)(A)	\$56.03	14	\$784 :		\$0 :	14	\$784 :	8	\$448 :	2	\$112	
140	(b) (7)(A)	\$57.40	18	\$1,005 :		\$0 :	18	\$1,005 :	8	\$459 :	2	\$115	
140	(b) (7)(A)	\$59.38	9	\$534 :		\$0 :	9	\$534 :	16	\$950 :	11	\$653	
140	(b) (7)(A)	\$59.64	2	\$119 :	12	\$716 :	14	\$835 :	4	\$239 :	2	\$119	
140	(b) (7)(A)	\$73.94		\$0 :		\$0 :	0	\$0 :	2	\$148 :	8	\$592	
140	(b) (7)(A)	\$125.03	2	\$250 :		\$0 :	2	\$250 :	4	\$500 :	6	\$750	
TOTAL TASK 140			80	\$4,000	30	\$1,250	110	\$5,250	72	\$4,042	46	\$3,016	

GILT EDGE EXPANSION PROJECT EIS
ENSR LABOR SUMMARY

May 26, 1989

LABOR		CURRENT MONTH			PREVIOUS MONTH			CUMULATIVE		BUDGETED CURRENT MONTH		PROJECTED ESTIMATE TO COMPLETE	
TASK	NAME	RATE	HOURS	COST	HOURS	COST	HOURS	COST	HOURS	COST	HOURS	COST	
900	(b) (7)(A)	\$24.21	1	\$12 :	1	\$24 :	2	\$36 :	0	\$0 :	0	\$0	
900	(b) (7)(A)	\$27.95	2	\$42 :	0	\$0 :	2	\$42 :	0	\$0 :	0	\$0	
900	(b) (7)(A)	\$32.50	6	\$179 :	9	\$293 :	15	\$471 :	6	\$195 :	55	\$1,788	
900	(b) (7)(A)	\$50.77	14	\$711 :	0	\$0 :	14	\$711 :	0	\$0 :	0	\$0	
900	(b) (7)(A)	\$54.70	3	\$164 :	2	\$109 :	5	\$274 :	10	\$547 :	115	\$6,291	
900	(b) (7)(A)	\$59.38	17	\$1,009 :	23	\$1,366 :	40	\$2,375 :	20	\$1,188 :	176	\$10,451	
900	(b) (7)(A)	\$125.03	5	\$625 :	16	\$2,000 :	21	\$2,626 :	8	\$1,000 :	51	\$6,377	
TOTAL TASK 900			47	\$2,742 :	51	\$3,792 :	98	\$6,535 :	44	\$2,930 :	397	\$24,905	
920	(b) (7)(A)	\$24.99	1	\$12 :	0	\$0 :	1	\$12 :	0	\$0 :	0	\$0	
920	(b) (7)(A)	\$59.38	5	\$297 :	0	\$0 :	5	\$297 :	8	\$475 :	139	\$8,254	
920	(b) (7)(A)	\$125.03	3	\$313 :	0	\$0 :	3	\$313 :	2	\$250 :	21	\$2,626	
TOTAL TASK 920			8	\$622									
TOTAL PROJECT			211.5	\$12,375	177	\$12,614	380	\$24,367	200	\$12,418	548	\$34,380	

NOTE: Task 100 hours budgeted for Idler are for the typing pool.
 Task 900 budgeted for 72 hours-to include M. Hanson & M. Donnegan
 all budgeted and projected hours for both under M. Hanson
 Task 140 - Caddis-Burrell and Linscott were used to assist Morehouse
 in reviewing baseline data reports.

FINANCIAL STATUS REPORT
GILT EDGE EXPANSION PROJECT EIS
BROHM MINING CORPORATION

MAY 26, 1989

1063-001 R. MOORE	CURRENT MONTH	PREVIOUS MONTH	CUMULATIVE	BUDGETED	BALANCE
=====					
TASK 100 SCOPING					
LABOR	\$4,478.83	\$5,376.51	\$9,855.34	\$5,889	(\$3,966)
ODCs	\$782.82	\$1,009.82	\$1,792.64	\$1,810	\$17
Subtotal	\$5,261.65	\$6,386.33	\$11,647.98	\$7,699	(\$3,949)
=====					
TASK 120 INTERFACE WITH BROHM					
LABOR	\$59.38	\$1,500.36	\$1,559.74	\$3,034	\$1,474
ODCs			\$0.00		\$0
Subtotal	\$59.38	\$1,500.36	\$1,559.74	\$3,034	\$1,474
=====					
TASK 130 REVIEW ENGINEERING DESIGN					
LABOR	\$472.53	\$694.39	\$1,166.92	\$6,259	\$5,092
ODCs	\$32.23		\$32.23	\$743	\$711
Subtotal	\$504.76	\$694.39	\$1,199.15	\$7,002	\$5,803
=====					
TASK 140 REVIEW BASELINE DATA					
LABOR	\$4,000.14	\$1,249.98	\$5,250.12	\$7,793	\$2,543
ODCs	\$5.50		\$5.50	\$4,989	\$4,984
Subtotal	\$4,005.64	\$1,249.98	\$5,255.62	\$12,782	\$7,526
=====					
TASK 250 DEVELOP & EVALUATE ALTERNATIVES					
LABOR	\$0.00	\$0.00	\$0.00	\$4,712	\$4,712
ODCs			\$0.00	\$2,086	\$2,086
Subtotal	\$0.00	\$0.00	\$0.00	\$6,798	\$6,798
=====					
TASK 260 ASSESS POTENTIAL IMPACTS					
LABOR	\$0.00	\$0.00	\$0.00	\$5,563	\$5,563
ODCs			\$0.00	\$4,215	\$4,215
Subtotal	\$0.00	\$0.00	\$0.00	\$9,778	\$9,778
=====					
TASK 310 PREPARE PRIMARY EIS SECTIONS					
LABOR	\$0.00	\$0.00	\$0.00	\$3,791	\$3,791
ODCs			\$0.00	\$0	\$0
Subtotal	\$0.00	\$0.00	\$0.00	\$3,791	\$3,791
=====					
TASK 320 AFFECTED ENVIRONMENT					
LABOR	\$0.00	\$0.00	\$0.00	\$10,517	\$10,517
ODCs			\$0.00	\$5,757	\$5,757
Subtotal	\$0.00	\$0.00	\$0.00	\$16,274	\$16,274
=====					
TASK 330 ENVIRONMENTAL CONSEQUENCES					
LABOR	\$0.00	\$0.00	\$0.00	\$13,519	\$13,519
ODCs			\$0.00	\$6,858	\$6,858
Subtotal	\$0.00	\$0.00	\$0.00	\$20,377	\$20,377

FINANCIAL STATUS REPORT
GILT EDGE EXPANSION PROJECT EIS
BROHM MINING CORPORATION

MAY 26, 1989

1063-001 R. MOORE	CURRENT MONTH	PREVIOUS MONTH	CUMULATIVE	BUDGETED	BALANCE
=====					
PAGE 2					
TASK 350 SECONDARY EIS SECTION PREPARATION					
LABOR	\$0.00	\$0.00	\$0.00	\$4,217	\$4,217
ODCs			\$0.00	\$0	\$0
Subtotal	\$0.00	\$0.00	\$0.00	\$4,217	\$4,217
=====					
TASK 500 PUBLICATION (DEIS & FEIS)					
LABOR	\$0.00	\$0.00	\$0.00	\$1,525	\$1,525
ODCs			\$0.00	\$7,810	\$7,810
Subtotal	\$0.00	\$0.00	\$0.00	\$9,335	\$9,335
=====					
TASK 600 PUBLIC HEARINGS & MEETINGS					
LABOR	\$0.00	\$0.00	\$0.00	\$6,862	\$6,862
ODCs			\$0.00	\$3,376	\$3,376
Subtotal	\$0.00	\$0.00	\$0.00	\$10,238	\$10,238
=====					
TASK 700 RESPONSE TO COMMENTS					
LABOR	\$0.00	\$0.00	\$0.00	\$5,243	\$5,243
ODCs			\$0.00	\$1,144	\$1,144
Subtotal	\$0.00	\$0.00	\$0.00	\$6,387	\$6,387
=====					
TASK 800 STATE PERMITS					
LABOR	\$0.00	\$0.00	\$0.00	\$5,564	\$5,564
ODCs			\$0.00		\$0
Subtotal	\$0.00	\$0.00	\$0.00	\$5,564	\$5,564
=====					
TASK 900 PROJECT MANAGEMENT					
LABOR	\$2,742.27	\$3,792.33	\$6,534.60	\$28,352	\$21,817
ODCs	\$77.96		\$77.96	\$4,527	\$4,449
Subtotal	\$2,820.23	\$3,792.33	\$6,612.56	\$32,879	\$26,266
=====					
TASK 920 MONTHLY PROGRESS MEETINGS					
LABOR	\$621.97	\$0.00	\$621.97	\$11,551	\$10,929
ODCs			\$0.00	\$6,147	\$6,147
Subtotal	\$621.97	\$0.00	\$621.97	\$17,698	\$17,076
=====					
TASK 950 QUALITY ASSURANCE					
LABOR	\$0.00	\$0.00	\$0.00	\$1,593	\$1,593
ODCs			\$0.00	\$0	\$0
Subtotal	\$0.00	\$0.00	\$0.00	\$1,593	\$1,593
=====					
TOTAL PROJECT					
LABOR	\$12,375.11	\$12,613.57	\$24,988.68	\$125,984	\$100,995
OTHER DIRECT COSTS	\$898.51	\$1,009.82	\$1,908.33	\$49,462	\$47,554
=====					
TOTAL:	\$13,273.62	\$13,623.39	\$26,897.01	\$175,446	\$148,549



Formerly ERT

April 28, 1989

ENSR Consulting
and Engineering

1716 Heath Parkway
Fort Collins, CO 80524
(303) 493-8878

Mr. David Blackford
Nemo Ranger District - USFS
460 Main
Deadwood, SD 57732

Dear David:

Enclosed find minutes of the meetings held last week for the Gilt Edge Expansion Project. A schedule for the EIS preparation is also included.

If you have any questions or comments, please contact Russ Moore or me.

Sincerely,

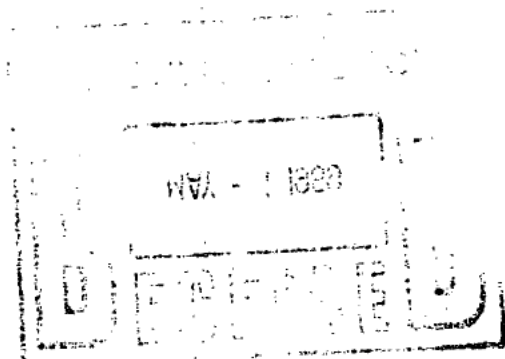
Phil Hackney
Phil Hackney
Project Manager

PH/jh

Ref: 1063-001

cc: D. Stewart - Brohm
D. Cornman - Bechtel

Enc.



GILT EDGE EXPANSION PROJECT MEETING

April 20, 1989

Lawrence County Building, Deadwood

ATTENDEES:

U.S. Forest Service

Dave Blackford
Don Murray
Lance Rom
Floyd Fowler
Don Kistler
Neil Hodges
Al Buerger
Mary Sue Waxler
Darwin Haeft
Bill Aney

County

Julie Fisher
Ralph Carr

ENSR

Russell Moore
Phil Hackney

Brohm/Bechtel

Doug Stewart
Dave Cornman
Cal Brown

State

Tom Durkin, DWR
Tim Olson, DWR
Tom Haberman, Arch. Res. Ctr.
Dave Odie, GF&P
Art Carter, GF&P

NOTES:

- MOU was discussed briefly
- Joint review process was discussed with conclusion that FS is lead agency represented by Dave Blackford, State represented by Tom Durkin, and Lawrence County represented by Julie Fisher (Constitutes Joint Review Committee - [JRC]).
- State Board of Mining and Minerals will make final decision after EIS is completed.
- EIS will take into account proposed activities and impacts on both FS and private lands.
- State has requirement to approve contractor conducting socioeconomic analysis. May result in separate and independent contractors. Cumulative effects evaluation could also be another contractor.
- Brohm has sent two copies of baseline reports to State and four copies to FS.
- Study Plan development - anticipate completion about end of May.

- Interdisciplinary Team (ID Team)
 - Issues identified by public; concerns by agencies.
 - May have disciplines overlapping between FS and State.
 - Responsible for reviewing data and analyses to verify adequacy and accuracy.
 - Will meet to resolve technical issues; JRC will make decisions regarding process issues.
 - Brohm and Bechtel will be present at ID team meetings to provide input, as needed.
 - ID team meetings need to have agenda to help determine technical representatives required to attend.
 - State currently does not have any identified group to review socioeconomics study and provide input.
 - ID team will be actively involved in the development and approval of the Study Plan resulting from scoping meetings.

- Project Organizations

Joint Review Committee

Dave Blackford - BBNF
 Julie Fisher - Lawrence County
 (George Opitz designated alternate)
 Tom Durkin - State (SDDWNR)

ID Team

Don Murray - Team leader - BBNF

Forest Service Personnel

Soils
 NEPA
 Engineers (2)
 Minerals
 Timber
 Wildlife
 Archaeology
 Land Use/Landscape Architect

State Representatives from

Mining Program - hydrologist and engineer
Air Quality and Solid Waste
Groundwater
Water Rights
Geological Survey
Game, Fish, & Parks (incl. T&E botanist)
Education & Cultural Affairs

Lawrence County

Socioeconomics (possible ID team member)

- Doug Stewart brought up questions regarding function and authority of ID team and expressed concerns over potential disagreements among ID teams. Issues brought up by ID team will be turned over to JRC for resolution.
- Preliminary issues (concerns) to be addressed in the EIS.
(The following lists of concerns are in some cases in addition to the draft concern list generated by BHNH dated 4/4/89 and in other cases are included in the draft list of concerns.)

Mary Sue Waxler (FS)

- Effect on local domestic wells.
- Quality of water that forms in pit.
- Housing for construction and permanent personnel.
- Increased recreational demand from new employees.

Darwin Haeft (FS)

- Acid generation potential in tailing and waste rock. Will radon level in tailings or waste rock be a problem?
- Possible mass movement on reclaimed dump faces and stability of dumps.
- Impacts of heavy metals in tailings regarding future land uses and reclamation.

Tom Durkin (State)

- Potential impacts to Madison aquifer downhill from operation.
- Question of whether Brohm's well water quality baseline is accurate (high pH) or reflects poor construction.
- Impacts on existing water rights and local wells, esp. in Galena and Strawberry Ridge.

Tom Haberman (State)
Lance Rom (FS)

- Impacts on cultural resource sites - one site within waste rock area considered eligible by SHPO - old mill foundation near top of Butcher Gulch.
- Site at lower end of Butcher Gulch also may be eligible.
- SHPO will voice concern over cumulative impacts from mining in Black Hills.

Tim Olson (State)

- Post-mining land use must be designated in mine permit application.

Bill Aney (FS)

- Possibility of T&E plant species.
- Introduction of exotic species and noxious weeds.

Julie Fisher (County)

- Increased road use and maintenance costs.
- Impact on law enforcement demand.
- Reclamation for future land use.
- Adjacent land use impacts - quality of life, property values
- Cost of fire protection.
- Increased population - school impacts
- Employment of local workers
- Opportunities: increased tax base, jobs, increased demands for supplies and services.

Art Carter (DGFP)
Dave Odie

- Short- and long-term impacts on wildlife and fisheries.
- Off-site mitigation potential.
- Identification of any special or unique lands in the project area (archaeological, historical, biological, etc.).
- Impacts on habitat diversity for deer, elk, turkey, grouse.
- Increased impacts on game enforcement due to increased access and use.

Dave Blackford (FS)

- Restriction of use and access to public lands while mining.
- Overlap of timber sale contract (5 years) which will conflict with mining use.

ca. 9 mill bd ft timber sale in Lost Gulch from highway up to cabin at head of Lost Gulch.

Mine proposal would negate most of road system put on to access area.

Would be logged via cable logging.

- Request for powerline upgrade to provide power for Brohm from Belle Fourche.
- Also proposal for natural gas line from Sturgis to mine. Very difficult routing problems.

Options cross 1) Major highway - reconstruction of Boulder Canyon, 2) Experimental watershed and critical game range, and 3) Military reserve.

Either of above corridor actions could trigger additional EISs.

- EIS probably should address the dedicated section of line tying into main line from mine.

Compiled 4/26/89
Phil Hackney (ENSR)

GILT EDGE EXPANSION PROJECT MEETING

April 21, 1989

USFS Nemo Ranger District, Deadwood

ATTENDEES:

Don Murray
Doug Stewart
Dave Cornman
Russell Moore
Phil Hackney

NOTES

- Discussed public meeting format
 - David Blackford will be moderator and explain NEPA process and laws, joint review process, meeting procedures, and mention the CEE study.
 - Don East, Doug Stewart, Dave Cornman will cover project history, corporation information, engineering, environmental planning, tailings dam, and benefits.
 - Questions from audience regarding NEPA process will be addressed but not questions regarding project details.
 - Artist renderings of site at reclamation and project area maps will be posted in meeting room.
 - ENSR to record and monitor tape recording of meetings.
- Project schedule was developed (see attached schedule sheet).
- Action Items
 - ENSR to provide meeting minute and correspondence to Blackford and copy Stewart and Cornman.
 - ENSR to provide monthly progress reports to Blackford and copy Stewart (four copies) and Cornman.
 - ENSR to look into water quality issues of tailings area and pit water. Check with M. Veatch about similar examples of old mine pits in sulfide materials (e.g., Ruth pit at Ely, Anaconda Berkley pit) and contact Harry Van Drielen for additional information.
 - ENSR invoice directly to Stewart and copy Don Murray.
 - Don to check into acquiring recent socioeconomic reports submitted by Wharf, Bond, Golden Reward.

- Dave Cornman to check into cultural resource issue regarding status of sites addressed in cultural resources report.
- Powerline and gas line corridors may require additional baseline data collection.

Complied 4/26/89
Phil Hackney (ENSR)

BROHM PROJECT SCHEDULE

- Scoping Meeting May 2-4
- Submit Draft Scoping Results (ICOs) May 22
- Submit Draft Study Plan to JRC May 30
 - EIS Outline
 - Detailed Analysis Procedures
 - Draft Significance Criteria
 - (provide thorough references)
- ID Team Meeting & ENSR Site Visit June 12-13
 - Identify Alternatives
 - Identify Baseline Data Deficiencies
 - Finalize Significance Criteria
- Finalize Study Plan June 23
 - (also latest date for project changes that require additional data)
- Complete Baseline Data Collection and Final Data to ENSR August 18
- Submit PDEIS October 13
- Receive Comments on PDEIS November 17
- Submit DEIS to BHFS December 20
- Publish DEIS January 1990
- Comment Period Ends April
- Submit FEIS June
- Submit Response to Comments on FEIS August
- Record of Decision August



March 30, 1989

Mr. Russell T. Moore
ENSR Corporation
P.O. Box 2105
Fort Collins, CO 80522-2105

RE: Letter of Authorization

Dear Mr. Russell T. Moore:

In accordance with the terms and conditions of that certain Professional Services Agreement dated March 30, 1989 (hereinafter "Agreement") between you and BROHM MINING CORP. ("BROHM") and the Memorandum of Understanding ("MOU") attached thereto, your environmental consulting services as a Consultant will be required for a period not to extend beyond December 31, 1990. Said consulting services shall be commenced on or about March 30, 1989.

I. SCOPE OF SERVICES

The specific environmental consulting services to be performed are to include and be consistent with the services identified in the MOU and the ERT Proposal to Prepare an Environmental Impact Statement (Document No. XP606H) and shall include, without limitation, the following:

See Schedule I attached to and made a part of this letter.

II. COMPENSATION AND EXPENSES

The compensation for such environmental consulting services is as stated in Exhibit A and A-1 of the Agreement.

Should you have any questions or reason to discuss this Letter of Authorization, please contact BROHM at the address on this letterhead. Please execute a copy of this letter to acknowledge your receipt of the letter and your agreement to perform the environmental consulting services authorized hereby.

BROHM MINING CORP.

By: _____
Douglas Stewart

Agreed to the _____ day of _____, 1989.

Consultant

SCHEDULE I

TASK 1

Assist the U.S. Forest Service ("USFS") in the process of determining the scope (scoping) of issues to be addressed and to identify significant issues related to the proposed action, including preparation of a scoping statement and detailed study plan as identified in the MOU.

TASK 2

Interface with BROHM representatives and their contractors responsible for project engineering and baseline environmental data collection to complete the transfer of existing data and information on the project.

TASK 3

Review available engineering design information on construction, operation and reclamation of the proposed project and identify any additional data/informational needs required for the EIS.

TASK 4

Review available baseline environmental data collected at the project site and identify any additional data requirements for the EIS.

TASK 5

Develop and evaluate alternatives to the proposed action, including mitigation measures not already included in the proposed action or alternatives, and identify any additional reasonable alternative actions that should be addressed in the EIS.

TASK 6

Determine the potential environmental impacts of the proposed and alternative actions, including direct, indirect and cumulative effects, and any means to mitigate adverse environmental impacts if not fully covered under Task 5.

TASK 7

Evaluate the information obtained from Tasks 1-6, summarize into figure, table and text format, and compile into sections on Proposed Action, Alternative Actions, Affected Environment and Environmental Consequences as presented in the NEPA guidelines for an EIS or as required by the U.S. Forest Service. Provide the necessary drafting, graphics, word processing and copying services.

TASK 8

Prepare all other required sections of the EIS, not described in Task 7 above, in accordance with the NEPA format or as specified by the U.S. Forest Service.

TASK 9

Publish 80 copies of the draft and final EIS for BROHM plus 120 copies of each document for the U.S. Forest Service.

TASK 10

Participate in hearings and meetings with the public and local, state and federal agency representatives that pertain to the draft and final EIS.

TASK 11

Prepare responses to review comments on the draft and final EIS from the public and local, state and federal agencies. Modify the draft EIS, as necessary, to reflect the review comments. Incorporate substantive comments and responses into the final EIS.

TASK 12

Meet with the U.S. Forest Service representatives on a monthly basis to discuss progress in development of the draft and final EIS, identify environmental and engineering informational needs, and to review budgeted and actual labor and expense charges. More meetings may be required to keep the project on schedule.

TASK 13

Provide engineering and environmental information to BROHM in text, table and figure format for use in preparing the State of South Dakota Mine and Mill Permit Application and other required local and state permit applications. This information would be the same in content and level of detail as that prepared for the EIS. BROHM will use this information to prepare the permit applications.

REPORTS

The Consultant will fulfill the reporting requirements for the project as described in the following sections.

ENVIRONMENTAL IMPACT STATEMENT (DRAFT AND FINAL)

Prepare a draft and final Environmental Impact Statements as specified under Tasks 7, 8, 9 and 11 above and in ERT's proposal. The statements are to be prepared under the direction of the U.S. Forest Service and will fulfill the requirements of NEPA. The Consultant shall provide a detailed outline of the EIS as part of the detailed study plan for review and approval by the U.S. Forest Service prior to preparation of the draft EIS.

PROGRESS REPORTS

Prepare monthly progress reports for submittal to the U.S. Forest Service. BROHM will be copied on these transmittals. The reports should contain (1) a section by section summary of progress to date on the EIS in graphic and text form, (2) outstanding informational needs to complete the EIS, (3) problems encountered and reasons for delays in meeting scheduled activities and the corrective action to be taken, and (4) a summary of cost control/accounting data as specified in ERT's proposal. These reports shall be provided by the third working day of the month and will describe the status of contract work completed during the previous month.

COST ACCOUNTING REPORTS

Prepare monthly summaries of project costs in table and graphic formats. Each monthly report shall contain the following:

- Monthly and cumulative year to date actual versus budgeted labor hours and costs by individual.
- Monthly and cumulative year to date actual versus budgeted expenses by technical category.
- Projected labor hours and associated costs and expenses for the following months for the duration of each major EIS activity.

Labor charges shall be supported by weekly timesheets containing a brief description of work activities. All expenditures on the project shall be supported by receipts and a brief description of expense. Costs will not be reimbursed unless properly documented.

MEETING MINUTES

Minutes of all meetings held between the Consultant and other participants in the EIS development or interested parties (e.g., local, state or federal agencies, contractors responsible for engineering and environmental baseline programs, and the general public) shall be provided to U.S. Forest Service within 5 working days of the date of the meeting. BROHM will be copied on these transmittals. A list of "action items" requiring input from others shall be presented at the end of the meeting notes. The organization and individual responsible for providing the information shall be identified as will the scheduled submittal data.

WORK SCHEDULE

The schedule below will be followed to the extent practicable by Consultant to prepare the EIS:

<u>Activity</u>	<u>Completion Date</u>
Project Initiation	3/30/89
Transfer of Baseline Data	3/22/89
Publish Notice of Intent to Prepare EIS	3/31/89
Site Visit	4/20/89
End Formal Scoping	4/28/89
Scoping Meetings	5/2-4/89
Submit Preliminary Draft EIS	10/27/89
Submit Draft EIS	12/01/89
Submit Comments on Draft EIS	3/02/90
Submit Final EIS	5/04/90
Submit Repsonse to Comments on Final EIS	7/13/90
Record of Decision	7/27/90

PROFESSIONAL SERVICES AGREEMENT
(BROHM MINING CORP.)

THIS PROFESSIONAL SERVICES AGREEMENT (hereinafter "Agreement"), entered into as of the 30th day of March, 1989, is between ENSR Corporation, hereinafter called "Consultant", whose address is P.O. Box 2105, Fort Collins, Colorado 80522-2105, and BROHM MINING CORP., hereinafter called "BROHM", whose address is P.O. Box 485, Deadwood, South Dakota 57732.

BROHM proposes to cause an Environmental Impact Statement ("EIS") to be completed on its Gilt Edge expansion project.

BROHM has entered into that certain Memorandum of Understanding ("MOU") dated March 23, 1989 with the Black Hills National Forest, Forest Service (hereinafter "Forest Service"), which MOU is attached hereto as Exhibit B and made a part hereof.

The Forest Service and BROHM have agreed to utilize the "Third Party" approach to provide support for and prepare the analysis and EIS.

Consultant represents that it is qualified and desires to prepare the analysis and EIS in accordance with the MOU.

NOW THEREFORE, for and in consideration of the foregoing and the mutual promises and covenants hereinafter set forth, the parties hereto agree as follows:

I. REPRESENTATIVE(S)

1. For purposes of this Agreement, BROHM's Representative(s) shall be:

- * Douglas E. Stewart, Project Manager
- * David D. Cornman, Bechtel Environmental Coordinator

2. Consultant's Representative(s) shall be:

- * Russell T. Moore, Project Manager
- * Philip D. Hackney, Assistant Project Manager

3. Pursuant to the MOU, the USDA Forest Service Representative(s) shall be:

- * Dave Blackford, District Ranger
- * Donald Murray, Minerals Specialist

Initials for BROHM _____

Initials for Consultant _____

4. BROHM and Consultant may, by notice given in writing to the other party, appoint additional or substitute Representative(s).

II. SCOPE OF SERVICES

1. Consultant shall perform pursuant to the terms and conditions of this Agreement the environmental consulting services as set forth in the Letter of Authorization attached to this Agreement and made a part hereof, and which may be modified or expanded by future Letters of Authorization, and accepted by Consultant. The individual Letter(s) of Authorization are incorporated into this Agreement by this reference.

2. All services performed by Consultant under this Agreement shall be in accordance with Letter(s) of Authorization and in accordance with the guidance and directions of the Forest Service Representative(s).

3. Consultant shall engage in discussions with authorized BROHM and U. S. Forest Service personnel, especially with regard to interpretation of data or findings developed or made while performing services under this Agreement.

4. The intent of this Agreement is that Consultant is to be an independent third party consultant reporting to the Forest Service. Consultant is to perform its services under this Agreement as instructed by the Forest Service Representative(s).

5. Consultant will prepare the EIS in accordance with all applicable federal, state and local regulations.

6. Consultant will cooperate with BROHM and the Forest Service in the defense of any challenge to the legality and adequacy of Forest Service compliance with the NEPA and CEQ regulations.

III. COMPENSATION AND EXPENSES

1. Compensation for services performed under this Agreement shall be according to the schedule set forth in Exhibit A and Exhibit A-1 attached hereto and made a part hereof. Except as otherwise provided, all amounts shall be in United States dollars.

2. Such compensation shall include all overhead and all profit.

Initials for BROHM _____

Initials for Consultant _____

3. In addition to compensation for services, Consultant shall be reimbursed for all reasonable and necessary expenses actually incurred by Consultant, including mileage and travel expenses. Transportation and subsistence costs shall be paid except when Consultant is at his place of business in Fort Collins, Colorado. Complete and accurate records of costs and expenses shall be kept by Consultant and shall be subject to audit by BROHM and the Forest Service using generally accepted accounting and auditing procedures.

4. Consultant shall prepare and submit to BROHM and the Forest Service on a calendar month basis a detailed statement of charges. The statement shall set forth the number of days or fractions of days of services performed and the dates and locations of performance, and shall be accompanied by receipts or other evidence substantiating expenses incurred. Statements shall be directed to Brohm Mining Corporation, P.O. Box 485, Deadwood, South Dakota 57732, Attn: Doug Stewart and U.S. Forest Service, Nemo District, Deadwood, South Dakota 57732, Attn: Don Murray. Subject to verification by BROHM and the Forest Service, payments of amounts due less any existing ~~set-offs~~ ^{disputed} _{charges} shall be made within thirty (30) days after receipt of such statements.

IV. AGREEMENT DURATION

1. This Agreement shall commence on the date hereof and shall be in effect through December 31, 1990, unless sooner terminated.

2. Either party may terminate this Agreement upon thirty (30) days' written notice to the other party at the addresses listed above. After such termination Consultant may be instructed to prepare and deliver a final report.

V. COMPLIANCE WITH STATE AND FEDERAL LAWS

Consultant shall comply with all requirements of any applicable federal, state, or local law, rule or regulation. Consultant represents that he has all licenses or other authorizations required to enable him to perform services hereunder in the state or country where the services are to be performed.

VI. INDEPENDENT CONTRACTOR

Consultant is and shall be in the performance of all work, services, and activities under this Agreement an independent contractor. Consultant shall not in any way at any

Initials for BROHM _____

Initials for Consultant _____

time be an employee or agent of BROHM, and shall not indicate or represent to any third party that Consultant is an employee or agent of BROHM. Consultant shall have no power to commit BROHM to any third party.

VII. PROFESSIONAL RESPONSIBILITY

Consultant agrees that it will provide in connection with the work requested under this Agreement the standards of care, skill, and diligence normally provided by competent professionals in the performance of services in respect to work similar to that contemplated by this Agreement.

VIII. HOLD HARMLESS

1. Consultant agrees to defend, indemnify, and hold BROHM, its affiliated and subsidiary companies and their employees, harmless against all costs, loss, or damage (including reasonable attorneys' fees) arising directly or indirectly out of the services to be performed by Consultant hereunder, except only claims arising out of accidents resulting from the sole negligence of BROHM.

2. BROHM agrees to defend, indemnify, and hold Consultant harmless against all costs, loss, or damage (including reasonable attorneys' fees) arising directly or indirectly out of the sole negligence of BROHM.

IX. INSURANCE

1. To protect BROHM against liability for damage, loss, or expense arising from damage to property or injury or death of any person or persons, arising in any way out of, in connection with or resulting from the work provided for hereunder, Consultant shall, during the progress of the work, carry, at its own expense, on forms and in reliable insurance companies selected by Consultant and acceptable to BROHM, and authorized to do business in the state or area in which the work is to be performed hereunder (or other insuring entity as called for herein), the following minimum insurance coverage:

Worker's Compensation Insurance:

A. Consultant shall meet and maintain compliance with the state laws which govern establishment and maintenance of Worker's Compensation Insurance and Occupational Disease Insurance by whichever of the following methods as such laws require:

Initials for BROHM _____

Initials for Consultant _____

(a) Obtaining Worker's Compensation including Occupational Disease Insurance as required by law and Employer's Liability Insurance with limits of not less than Five Hundred Thousand Dollars (\$500,000) for injuries to or death of more than one person resulting from any accident or occupational disease covering all work places involved in this Agreement.

(b) Obtaining and maintaining Worker's Compensation and Occupational Disease Insurance from the insuring entity of the state whose laws apply to the work performed by Consultant under this Agreement.

B. Comprehensive General Liability Insurance, including Premises/Operations, Contractual, Products/Completed operations and Contractors's contingent liability with respect to subcontractors, with Bodily Injury Liability limits of One Million Dollars (\$1,000,000) for injury or death resulting from any one occurrence, and Property Damage Liability limit of not less than One Million Dollars (\$1,000,000) per occurrence, including damage to BROHM's property.

C. Automobile Liability Insurance, including all nonowned, hired, rented, or owned equipment, with Bodily Injury Liability limit of not less than One Million Dollars (\$1,000,000) for injuries to or death of any one person and not less than One Million Dollars (\$1,000,000) for injuries to or death of more than one person resulting from any one occurrence, and Property Damage Liability limit of not less than One Million Dollars (\$1,000,000) per occurrence.

2. All policies providing coverage hereunder shall contain provisions that (i) no cancellation or material changes in the policies shall become effective except on thirty (30) days' written notice thereof to BROHM, and (ii) the insurance companies will have no right of recovery or subrogation against BROHM, its divisions, affiliates, or subsidiary companies, it being the intention of the parties that the insurance so effected shall protect all parties, ^{to extent by contract, liability, as specified in article 17} and the Consultant's carrier shall be liable for any and all losses covered by the above-described insurance.

3. Any and all deductibles in the above-described insurance policies shall be assumed by, for the account of and at Consultant's sole risk.

Initials for BROHM _____

Initials for Consultant _____



ENSR Consulting and Engineering
(Formerly ERT)

Commercial Terms

GENERAL CONDITIONS

Effective: January 1, 1989

ACCESS - Client grants ENSR Corporation, referred to herein as "ENSR", and its subcontractor's authority to enter the property upon which ENSR's Services are to be performed ("Site"). ENSR will take reasonable precautions to minimize damage to the Site and adjoining properties and any cost of correction, repair or replacement shall be borne by Client.

CLIENT INFORMATION - Client warrants the completeness and accuracy of information supplied by it to ENSR and acknowledges that ENSR is relying upon such information without verification by ENSR of its completeness and accuracy. Client shall immediately notify ENSR in writing of any information or data in the possession of or known to Client relating to subsurface conditions affecting the Site.

STANDARD OF SERVICES AND WARRANTY - ENSR shall perform its Services in accordance with generally accepted engineering and scientific practice in effect at the time Services are rendered and adopted by environmental firms performing services of a similar nature.

ENSR warrants that if any of its completed Services fail to conform to the above professional responsibility standard, ENSR will, at its expense, perform corrective Services of the type originally performed as may be required to correct any such defective Services of which ENSR is notified by Client in writing within six months of the completion of Services.

Except as provided in this section, ENSR makes no other warranty, express or implied, and ENSR shall have no other liability to Client for defective Services, whether caused by error, omission, negligence or otherwise.

CONFIDENTIAL INFORMATION - ENSR will not knowingly disclose to others any confidential information furnished by the Client in connection with this project. Any information which the Client intends to be covered by this paragraph shall be clearly marked "Confidential". These restrictions shall not apply to information that: (i) ENSR had in its possession prior to disclosure by the Client, (ii) becomes public knowledge through no fault of ENSR, (iii) ENSR lawfully acquires from a party not under an obligation of confidentiality to the Client, or (iv) is independently developed by ENSR. ENSR will not publish, in any technical articles or otherwise, information obtained from the Services in a manner that would be identifiable to the Client's project without prior consent.

Client agrees that ENSR may use and publish client's name and a general description of the Services provided to Client by ENSR in describing ENSR's experience and qualifications to other clients or potential clients.

USAGE OF DATA AND DOCUMENTS - "Information" includes all reports, field data, notes and laboratory test data prepared by ENSR. This Information shall be considered instruments of service and ENSR shall retain a property interest. Client shall have the right to make and retain copies and use all Information, provided however, the Information shall not be used or relied upon by any party other than Client, and such use shall be limited to the particular Site and project for which the Information is provided. Any reuse on other projects or locations without the written consent by ENSR, or use by any party other than Client will be at Client's sole risk and without liability to ENSR and the Client shall indemnify and defend ENSR from any claims, losses or liabilities arising therefrom.

ENSR
would
like to
add to
contract

INSURANCE AND INDEMNITY - ENSR shall maintain Workers' Compensation and Employer's Liability Insurance in accordance with requirements of the state in which the Services are being performed, comprehensive liability insurance (including contractual and contractor's protective liability coverage) with combined single limit of \$1,000,000 per occurrence for bodily injury and property damage and automobile liability coverage including owned and hired vehicles with a combined single limit of \$1,000,000 per occurrence for bodily injury and property damage.

ENSR shall indemnify Client, its officers, directors, agents and employees against claims, demands, and causes of action including expenses of defense for personal injury, disease or death and loss or damage of property (other than property of Client for which Client hereby assumes responsibility) arising during the performance of Services and caused by the negligence or willful misconduct of ENSR.

Client shall indemnify ENSR, its officers, directors, agents, and employees from all claims, demands and causes of action including expenses of defense for personal injury, disease or death and loss or damage of property arising out of or in any manner connected with or related to the performance of Services and caused by the negligence or willful misconduct of Client.

REMEDIES - Neither party nor their affiliated companies, nor the officers, agents and employees or contractors of any of the foregoing, shall be liable to the other in any action or claim for consequential or special damages, loss of profits, loss of opportunity, loss of product or loss of use and any protection against liability for losses or damages afforded any individual or entity by these terms shall apply whether the action in which recovery of damages is sought is based on contract, tort (including sole, concurrent or other negligence and strict liability of any protected individual or entity), statute or otherwise. To the extent permitted by law, any statutory remedies which are inconsistent with these terms are waived.

RELATIONSHIP OF PARTIES - ENSR's Services are performed as an independent contractor and not as the Client's agent, partner or joint venturer.

FORCE MAJEURE - ENSR will have no liability for any failure to perform or delay in performance due to any circumstances beyond its reasonable control.

ENTIRE AGREEMENT - The Client's engagement of ENSR represents Client's acceptance of ENSR's Commercial Terms and these General Conditions, which constitute the entire understanding and supersede any prior or subsequent communications, representations or agreements of the parties, whether oral or written, including Client's additions or different terms and conditions that may be contained in any purchase order, work order, acknowledgment form, manifest or other document forwarded by Client to ENSR to which notice of objection is hereby given. If any portion of the Commercial Terms or these General Conditions are held invalid or unenforceable, any remaining portion shall continue in full force and effect. There shall be no assignment of the rights or obligations by either party and any assignment shall render the duties and obligations of the other party null and void.

4. Consultant shall secure and deliver to BROHM, prior to BROHM's execution of this Agreement, certificates evidencing that insurance coverages of the types and limits provided for above are in full force and effect. If requested by BROHM, Consultant shall furnish to BROHM's legal counsel certified copies of all such policies.

5. When requested by BROHM, Consultant shall furnish, or cause to be furnished to BROHM's legal counsel in the manner above provided, certificates of insurance coverage for each subcontractor in minimum amounts deemed necessary by Consultant to cover the work of the particular subcontractor. Should insurance requirements for a subcontractor be less than the minimum requirements for Consultant, as set out above, BROHM may, at its option require Consultant to secure such minimum coverage.

6. Failure to secure the insurance coverages, or the failure to comply fully with any of the insurance provisions of this Agreement, or the failure to secure such endorsements on the policies as may be necessary to carry out the terms and provisions of this Agreement, shall in no way act to relieve Consultant from the obligations of this Agreement, anything in this Agreement to the contrary notwithstanding. In the event that liability for any loss or damage be denied by the underwriter or underwriters for any other reason, or if Consultant fails to maintain any of the insurance herein required, Consultant will hold harmless, defend and indemnify BROHM against all losses, claims, demands, and expenses, including attorney's fees, which would otherwise be covered by said insurance.

7. In the event BROHM should desire any other type of insurance during the Operations, such insurance shall be provided by Consultant with such firm or firms as BROHM may direct and BROHM shall be named on the policy as an additional assured, and the Agreement terms shall be adjusted by an amount equal to the cost of such insurance.

8. Notwithstanding any other provision of this Agreement, the insurance protection afforded BROHM under this Agreement shall inure to the benefit of BROHM and all of its subsidiary and affiliated companies; and when so requested by BROHM, Consultant shall furnish certificates of insurance showing such subsidiary and affiliated companies as insured.

Initials for BROHM _____

Initials for Consultant _____

X. OWNERSHIP OF WORK PRODUCT

1. All reports, publications, exhibits, films, data, conclusions, and other work product furnished by BROHM to Consultant or obtained or developed by Consultant under this Agreement and all information regarding BROHM's business plans, operations, properties, practices, methods, inventions, and discoveries shall be and remain the property of BROHM. Upon termination of this Agreement or upon the prior request of BROHM, Consultant will deliver such work product and information to BROHM and the Forest Service.

2. Consultant shall not acquire any interest, direct or indirect, in any mining claims, leases, mining rights, or fee lands in the project area without BROHM's prior written consent. Any interest acquired in violation of this paragraph shall, at BROHM's request and at no cost to BROHM, be conveyed to BROHM.

XI. AMENDMENT

This Agreement may only be amended in writing, signed by each party hereto.

XII. ASSIGNMENT

Neither this Agreement nor any payments due to Consultant hereunder shall be assigned by Consultant without first obtaining BROHM's and Forest Service's written consent.

XIII. BINDING EFFECT

The terms of this Agreement shall apply to and be binding upon the successors and permitted assigns of the respective parties hereto.

XIV. ENTIRE AGREEMENT

This Agreement constitutes the entire Agreement between the parties with respect to the subject matter hereof.

Initials for BROHM _____

Initials for Consultant _____

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first above written.

CONSULTANT
ENSR Corporation

By _____

Title _____

BROHM MINING CORPORATION

By _____

Rex L. Outzen

Title - General Manager

Initials for BROHM _____

Initials for Consultant _____

EXHIBIT A

I. COMPENSATION

The parties agree that the following compensation schedule shall apply to the Agreement between ENSR Corporation ("Consultant") and BROHM MINING CORPORATION ("BROHM") dated March 30, 1989.

See Exhibit A-1 attached hereto and made a part hereof.

In no event, however, shall the total compensation and expenses exceed \$200,000, unless provided for in a separate Letter of Authorization signed by both parties.

Initials for BROHM _____

Initials for Consultant _____

EXHIBIT A-1

COMPENSATION SCHEDULE

EXHIBIT B
MEMORANDUM OF UNDERSTANDING

MEMORANDUM OF UNDERSTANDING
Between
THE BLACK HILLS NATIONAL FOREST, FOREST SERVICE,
And
BROHM MINING CORP.
APPLICANT

I. INTRODUCTION AND PURPOSE

This Memorandum of Understanding (MOU) is entered into and made effective this 23rd day of March, 1989 by the Black Hills National Forest, Forest Service, U.S. Department of Agriculture, hereinafter known as the "Forest Service", and Brohm Mining Corp., hereinafter known as "Applicant". This MOU concerns the Applicant's proposed Gilt Edge expansion project, hereinafter known as the "Project".

The Applicant is a private company that proposes to cause an Environmental Impact Statement (EIS) to be completed in accordance with applicable federal and state laws, regulations, and policies, and with this MOU.

NOW, THEREFORE, it is mutually agreed by both parties hereto as follows:

Development of the proposed Project requires the preparation of an EIS which will be prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality Regulations (40 CFR, Parts 1500-1508), Forest Service Handbook (FSH) 1909.15 and Chapter 1950 of the Forest Service Manual (FSM), and other applicable laws, regulations, and policy.

The Forest Service and the Applicant desire that the environmental analysis and documentation preparation process be conducted in a timely and expeditious manner, as more fully detailed herein. To facilitate that objective, this Memorandum of Understanding establishes conditions, time frames, and procedures for the analysis and preparation of the appropriate documents.

The Forest Supervisor is the official responsible for making the decision with respect to the EIS. The District Ranger is responsible for conducting and managing the analysis and the preparation of the document. All contacts with the USDA, Forest Service, by the Applicant or its representatives shall be through the District Ranger or his designated representative.

This Memorandum of Understanding and actions taken under it do not in any way commit the Forest Service to make a decision favorable to the Applicant.

II. THIRD PARTY APPROACH

The Forest Service shall assemble an inhouse Interdisciplinary Team (IDT) of technical experts to manage NEPA process, determine the scope of the analysis, and assure appropriate documentation is prepared. The IDT shall be supported by a contractor as described below.

The Forest Service and the Applicant agree to utilize the "Third Party" approach to provide support for the IDT and prepare the analysis and EIS. The Applicant shall solicit proposals from qualified contractors for preparing the analysis and EIS. The Forest Service shall participate in the review and analysis of proposals submitted, including interviews of the prospective contractors and contractor personnel and shall make the final selection of the contractor. The Forest Service shall be responsible for specifying the information to be developed in the analysis and EIS, and shall supervise the gathering, analysis, and presentation of the information. The Forest Service shall have sole authority for approval of the statements, analyses, and conclusions included in the EIS. The Forest Service shall have responsibility for assuring compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), and CEQ Regulations adopted pursuant thereto, appearing in 40 CFR 1500-1508, and the Forest Service Manual and Handbook, for their respective authorities. All studies, analyses, maps, drawings, and other documents relating to the EIS will become the sole property of the USDA, Forest Service, except that the Applicant will receive and may retain copies thereof.

III. SELECTION OF THE CONTRACTOR (THIRD PARTY)

Using the procedure outlined in Section II of this Memorandum, the Applicant shall identify contractors qualified to conduct the analysis and prepare the NEPA documents. The Applicant will submit the qualifications of the identified contractors to the Forest Service for evaluation. Within 10 working days after submittal by Applicant, the Forest Service shall select or reject a contractor based on its evaluation of the contractor's qualifications. The Forest Service will satisfy itself that the selected contractor will meet the following minimum criteria:

1. The contractor must have demonstrated expertise, technical competence, and capability for evaluating the physical, biological, economic, and social factors related to the proposed action.
2. The contractor must have a good record of performance on contracts with Government agencies or public bodies, and with private industry, including satisfactory work and the ability to meet schedules.

3. The contractor must have the demonstrated capacity to perform the work (including any specialized services) within the time limitations, considering the contractor's current and planned work load.
4. The contractor must have demonstrated familiarity with types of problems applicable to the Project.
5. The contractor must have demonstrated ability to produce thorough, readable, and informative documents.
6. The contractor must have demonstrated expertise in working with the National Environmental Policy Act (NEPA) (PL 91-190), all other federal environmental laws and regulations, and any applicable state or local laws and regulations.
7. The contractor must be readily available to the Black Hills National Forest headquarters for consultation and meetings.
8. The contractor must be objective, must have no financial or other interest in the outcome of the application for the easement, and must be willing to execute a conflict of interest and objectivity certification in substantially the form attached hereto.
9. The Forest Service shall be provided with a copy of the proposed form of contract to be entered into for performance of the environmental impact statement. Prior to execution of said contract, Applicant shall obtain Forest Service approval of said contract, as being in compliance with this Memorandum of Understanding and as including performance of work necessary to assure compliance with requirements of the National Environmental Policy Act of 1969. Upon completed execution of the agreement, Applicant shall provide the Forest Service with an executed copy thereof. Forest Service review of the proposed form of contract shall be completed within 10 working days after receipt thereof.

IV. GENERAL DESCRIPTION OF CONTRACTOR'S RESPONSIBILITIES

The Forest Service will make the final determination of the scope and contents of the environmental document. The contract between the Applicant and the contractor will specify that contractor will prepare the EIS in accordance with all applicable federal, state and local regulations. The selected contractor will be under the sole guidance and direction of the Forest Service.

The contractor will conduct a scoping process (pursuant to 40 CFR 1501.7 and Forest Service Handbook 1909.15., Chapter 10) under the direction of the Forest Service. At the end of the process, the contractor shall prepare a scoping statement, identifying the significant issues and concerns related to the proposed action, and submit it to the Forest Service for approval. The scoping statement shall be simultaneously submitted to the Applicant for review and comment.

The Forest Service shall determine the scope and content of the analysis. The contractor shall prepare a detailed draft study plan to guide the NEPA process and submit it to the USDA, Forest Service within 45 days after approval of the scoping statement.

Part I of the study plan will establish criteria and standards such as the following items:

1. The kind, detail, and accuracy of data.
2. The depth or level of analysis.
3. The formulation and evaluation of alternatives.
4. The determination of whether the environmental consequences of the proposed action are significant.

Part II of the study plan will address procedural matters such as:

1. Type of document to be prepared, and length and detail of documentation.
2. Format and content of documents.
3. Coordination of efforts and exchange of information.
4. Procedures for review, comment, and revision of section of the EIS and study report.
5. Procedures for release and disclosure of data and information.
6. Establishing a schedule for completion of the draft and final NEPA documents and section thereof.
7. Procedures responding to comments received during the draft review and comment period.

The contractor will be responsible for preparing any necessary environmental documents in accordance with the conditions and guidelines set forth in the study plan and as directed by the Forest Service, in order to comply with NEPA and CEQ Regulations adopted pursuant thereto at 40 CFR 1500-1508, the Forest Service Manual and Handbook.

V. RESPONSIBILITY FOR COSTS

All costs incurred with the employment of the contractor and subject to the contract between the Applicant and contractor shall be the sole responsibility of the Applicant, and the Applicant agrees to hold harmless and indemnify the Forest Service with respect to any and all claims, demands, cause(s) of work, or from purchases of materials by contractor, or any services utilized in the analysis or the preparation of the NEPA documents pursuant to the contract between Applicant and contractor.

The Applicant shall be responsible for the costs of printing and reproducing copies of the draft and final NEPA documentation and study report, and shall furnish the Forest Service with 100 copies of each document for use and distribution.

The Applicant agrees to enter into a collection agreement attached herein to pay for costs incurred by the Forest Service above the normal administrative duties for performance of work required by law or policy but not funded by the agency on a time schedule beneficial to the Applicant.

In the event of a challenge to the legality and adequacy of Forest Service compliance with the National Environmental Policy Act of 1969, or compliance with CEQ Regulations adopted pursuant thereto under 40 CFR 1500-1508 and the Forest Service Manual and Handbook, for the EIS, the Applicant shall cooperate and shall use its best efforts to provide by contract that the contractor will also cooperate in the defense of any such challenge, it being understood that the primary responsibility for defense of any such action will rest with the Forest Service. Nothing herein shall be deemed to preclude Applicant from instituting such a challenge.

VI. SCHEDULING FOR ANALYSIS AND REVIEW

The parties agree to employ diligent efforts and use their best efforts to adhere to various schedules to be agreed upon by the parties. Nothing in this clause shall affect the right and liabilities of any party hereto under local, state, or federal laws. Performance of federal obligations hereunder is subject to appropriations of Congress.

VII. MISCELLANEOUS

- A. The parties have identified the below named individuals as their representatives for purposes of all notices, communication, and contact required by this Memorandum of Understanding:

1. Applicant:

Douglas E. Stewart

2. USDA, Forest Service

Dave Blackford (District Ranger)

Donald Murray (Minerals Specialist)

B. Unless otherwise directed, all requests for authorization to occupy or conduct investigations upon National Forest lands shall be made to the Nemo District Ranger, Deadwood, South Dakota.

C. Termination. This Memorandum of Understanding may be terminated upon 30 days written notice by either party.

D. Amendment. This agreement may be amended or modified at any time by the mutual written agreement of the parties.

Black Hills National Forest, Forest Service, U.S. Department of Agriculture.

BY: _____
Darrel L. Kenops,
Forest Supervisor

Date: _____

APPROVED
Brohm Mining Corp.

BY: _____
Rex L. Outzen

Date: _____

BY: _____
Douglas E. Stewart

Date: _____

ATTENTION: FALSE STATEMENTS IN THE
FOLLOWING CERTIFICATION ARE PUNISHABLE
BY FINE AND IMPRISONMENT (U.S. CODE,
TITLE 10, SEC. 1001). READ THE
CERTIFICATION CAREFULLY BEFORE COMPLETION
AND EXECUTION.

CONFLICT OF INTEREST AND OBJECTIVITY CERTIFICATION

The UNDERSIGNED hereby CERTIFIES that it has entered into an agreement for preparation of an EIS concerning Brohm Mining Corp.'s Application related to the Gilt Edge expansion project, and that it

1. Has no financial or other interest in the outcome of the Application;
2. Is not subcontracted for any work related to this Application to the firm responsible for the engineering and design of facilities that may be proposed in relation to this Application;
3. Is not affiliated with, or a subsidiary of, the firm responsible for the engineering and design of facilities under this Application;
4. Is not financially dependent upon the Applicant or the firm responsible for the engineering and design of facilities under this Application; and

The UNDERSIGNED FURTHER CERTIFIES that it is duly authorized to execute this Certification, and that all of the statements made herein are true, correct, and complete, to the best of its knowledge and belief, and are made in good faith.

Signature

Date Signed



March 22, 1989

Mr. Russell T. Moore, Ph.D.
ERT, 1716 Heath Parkway
Fort Collins, CO 80524

Dear Russell:

I have enclosed copies of the exact same documents with our Plan of Operations sent to the U.S. Forest Service on March 15, 1989. The reports are for your review in working with the Forest Service on an Environmental Impact Study.

I have not enclosed a contract for terms of payment. The one that was prepared by our legal advisor did not address the relationship of ERT being an independent third party contractor reporting to the Forest Service. A new contract should be available next week and Dave Cornman of Bechtel may be addressing the issue for Brohm.

If you have any questions please call me at our office (605) 578-2107.

Sincerely,
Brohm Mining Corp.

Doug Stewart
Project Manager

DS/st

cc: Rex Outzen, Brohm
Don Murray, Forest Service
Dave Cornman, Bechtel

Enclosures:

- 2 ea.- Plan of Operations, Gilt Edge Expansion Project
Volumes I & II, January 1989
- 1 ea.- Baseline Hydrologic Field Studies and Description of
Existing Hydrologic Environment -
EnecoTech, Volumes 1-4, November 1988
 - 1 - Description of the Existing Baseline Air Quality -
EnecoTech, January 1989
 - 1 - Gilt Edge Mine Expansion Project Vegetation Studies -
OEA Research, January 13, 1989
 - 1 - Gilt Edge Mine Expansion Project Wildlife Investigations -
OEA Research, January 13, 1989
 - 1 - Soils Resources - Gilt Edge Expansion Project -
Intermountain Soils, Inc., January 9, 1989
 - 1 - Geochemical Evaluation of Soils in Butcher and Lost Gulch,
South Dakota -
Geochemical Engineering Inc., January 1989
 - 1 - An Intensive (Level III) Cultural Resource Inventory Survey
of the Gilt Edge Expansion Project, Galena Vicinity,
Lawrence County, South Dakota -
Dakota Research Services, October 1988
 - 1 - Geology and Soils Literature Review of the Gilt Edge
Project Area -
EnecoTech, August 26, 1988
 - 1 - Vegetation and Wildlife Reconnaissance Survey of the Gilt
Edge Project Area -
EnecoTech, August 26, 1988
 - 1 - Cultural Resources of the Gilt Edge Project Area -
EnecoTech, August 26, 1988
 - 1 - Preliminary Lawrence County, South Dakota, Socioeconomic
Baseline Report -
EnecoTech, August 26, 1988
 - 1 - Conceptual Design Report, Tailings and Waste Rock Storage
Facilities -
Knight-Piesold, July 29, 1988
 - 1 - Geotechnical Assessments and Preliminary Slope Design
Alternatives -
Piteau Associates, December 1988
 - 1 - Water Resource Study - Identification of Potential Water
Supply Sites -
EnecoTech, July 15, 1988